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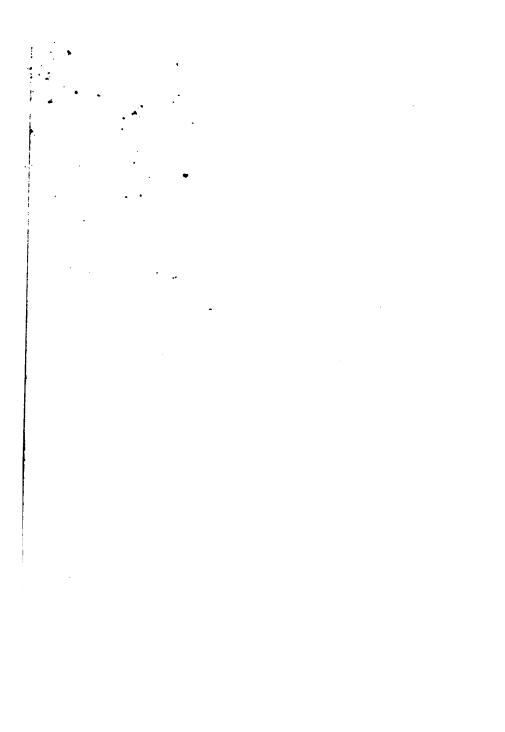
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PERSONAL HEALTH

A DOCTOR BOOK
FOR DISCRIMINATING PEOPLE

WILLIAM BRADY, M. D.



PHILADELPHIA AND LONDON
W. B. SAUNDERS COMPANY
1916

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TO MINE OWN PEOPLE

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author assumes the responsibility of giving his individual judgment, apprising the reader, of course, that it is the author's opinion which is being printed.

Correspondence with thousands of readers of "Health Talks" throughout the country has familiarized the author with many of the misapprehensions and misunderstandings of medical and hygienic questions. It will be endenvered to correct these errors and to explain in detail such points as seem to be obscure in the popular mind.

WILLIAM BRADY.

Exame, New York.
Softmire, 1976.

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PERSONAL HEALTH

CHAPTER I

THE TEETH AND THE MOUTH

THE TEETH

THE primary, "milk teeth" or "baby teeth," are cut at intervals from the age of six months to that of three years.

Four central incisors—sixth to eighth month.
Four lateral incisors—eighth to twelfth month.
Four anterior molars—twelfth to eighteenth month.
Four canines—eighteenth to twenty-fourth month.
Four posterior molars—twenty-fourth to thirty-sixth month.

If the teeth are cut too soon or too late it may be that the child requires medical attention for some constitutional disturbance, but if so the need is neither determined nor explained by the mere fact that teeth have or have not been cut.

"Teething" is usually not accompanied by any symptoms whatever. Occasionally the gum over a tooth about to be cut will appear somewhat swollen and inflamed, and the child will be peevish and irritable for a day or two. But never is it true that stomach and intestinal trouble, convulsions, or any other serious illness depend upon teething. The writer has never in his

professional life lanced a child's gums, though often besought to do so by the neighborhood grannies, who sum up all the diseases of infancy under two inclusive but scarcely tenable diagnoses—"teething" and "worms." Such physiologic epochs as teething, puberty, and change of life are no longer considered factors of disease.

Decayed Teeth in Children.—The old-fashioned practice of leaving children to "outgrow" their abnormalities is now happily dying out and parents are learning that an ounce of prevention saves many doctors' bills. Diseased tonsils, perhaps adenoids, and certainly many of the digestive disturbances of childhood are often caused by decayed teeth.

So-called "colds," sore throat, kernels (enlarged lymph-nodes) in the neck, possibly "scrofula" (tuberculosis of the lymph-nodes) may be ascribed to neglect of the baby teeth in a great many cases.

As soon as a child is able to wash his hands before eating—a habit parents should instill as early as possible—he can learn to brush his teeth. The brushing should be done at least every night before retiring. Plain soap is as good as any dentifrice, but any of the pleasant pastes or powders on the market may be used if desired. It is the brushing that counts and the regularity with which it is done.

If the primary teeth are preserved intact, as they should be with care, the secondary set will be likely to come in straight and even and remain sound. Obviously, a mouth contaminated by a decayed baby tooth is not a favorable place for the preservation of a permanent tooth.

The Permanent Teeth.—The two lower central incisors and the four first molars are usually cut between

the sixth and eighth years, and the other teeth of the permanent set make their appearance at intervals from the seventh to the seventeenth to the twenty-fifth year, when the third molars, the "wisdom" teeth, are erupted. Dr. Talbot, in a tabulation of a large number of adults, found that from one to all four of the wisdom teeth never are cut in 47 per cent. of adults. Not rarely an unerupted third molar, sulking in its bony tomb, causes inveterate facial neuralgia, which nothing short of an x-ray picture of the jaw will explain, and nothing but a surgical exhumation of the buried molar will relieve.

Ulcerated Tooth.—An "ulcerated" tooth is really an abscess at the root of a tooth. The pus accumulates in a confined area between the tooth and the bony walls of the jaw. If the dentist can drill through the cavity in the tooth and reach the pus, thus draining the abscess, it will bring relief and, perhaps, the tooth may be saved by subsequent treatment. Otherwise the safe and always advisable treatment for an ulcerated tooth is immediate extraction, for the same reason that you would extract a sliver from a festering wound—to give exit to the poisonous matter. Neglected, the pus will probably eat its way through the thin wall of the jaw bone and cause a "gum boil," which should be incised at once; or, if external poultices or heat have been used, the pus may break through the cheek, leaving a disfiguring scar. Sometimes an alveolar abscess, as dentists call it, does serious damage to the jaw bone, the pus burrowing along beneath the periosteal membrane of the bone, which is thus separated, so that the bone loses its nutrition, dies (necrosis), and either demands a radical operation or, perhaps, terminates in general bloodpoisoning. Too often a doctor or dentist has been unjustly blamed for such a state of affairs when, in reality, the patient's own negligence or procrastination is wholly responsible for the misfortune. Any one with an ulcerated tooth should not listen to the foolish saying that it is dangerous to pull the tooth until the inflammation is gone, because to wait for such a time may prove disastrous, to say nothing of the needless suffering entailed.

If threatened with an ulcerated tooth, one should take a hot mustard foot-bath in bed. (See Appendix.) Do not apply a poultice or any irritant to the face, but rather use hot water to rinse the mouth. The gum in the vicinity of the aching tooth may be painted once with a mixture of tincture of aconite and tincture of iodin, equal parts. An active cathartic should be taken, preferably a saline. Dry heat, such as a hot-water bag or a hot electric pad, may be applied externally for the pain.

The Teeth and the Blood.—Oral sepsis—mouth poisoning—is one of the most frequent causes of anemia, or weak blood. People who have habitually neglected their teeth find it difficult to believe that "those old stumps" can possibly have anything to do with the insidious failure of health, but there can be no denying the gratifying improvement so often observed after the mouth has been put in a reasonably wholesome condition. Dieting, taking tonics, traveling for the health, visiting the sanatoria and spas in search of the elusive thing, all fail miserably while the septic oral state remains. As Poe wrote, in his Purloined Letter, ". . . to conceal this letter, the minister had resorted to the sagacious expedient of not attempting to conceal it at all." medical practice we are impressed with the fact that our greatest errors are the result of overlooking the obvious.

Some of the severest cases of anemia, bordering on the pernicious type if not that type itself, depend upon oral sepsis—and in mouths supposedly well cared for. It is not the poisonous matter swallowed from visible sources, but the toxic products of bacterial activity absorbed directly into the blood from the "blind" abscess or the concealed pus-pocket in the gum that ruins health. The mouth, it should be understood, readily absorbs—indeed, it will absorb some drugs and poisons more quickly than the stomach itself.

A familiar condition consequent upon oral sepsis is obstinate indigestion. Here the continual unconscious swallowing of poisonous material may have a bearing, though the systemic absorption is probably the more serious factor. In some cases a marked loss of tonicity or actual atrophy of the stomach lining occurs, with insufficient or absent gastric juice.

Pyorrhea Alveolaris et Dentalis, Riggs' Disease.— The chronic inflammation of the gums (gingivitis) and suppuration (pus formation) in the tooth sockets known as Riggs' disease or pyorrhea (flow of pus) is now considered an infection of the gums and tooth sockets with certain organisms, probably different types of the pusproducing cocci together with a higher form, the Endameba buccalis, an ameba analogous to that which causes tropical dysentery.

According to Drs. Bass and Johns, of Tulane Medical School, something like 90 per cent. of adults harbor this endameba and have more or less pyorrhea or gingivitis. The relation between pyorrhea and the general health has already been dwelt on. Very recent investigation by different clinicians establishes the causative rôle of this mouth infection in various types of joint disease

known as chronic rheumatism and chronic arthritis deformans.

By way of treatment for pyorrhea the persistent technical work of the dentist comes first. Next in importance, we think, is the emetin treatment, introduced by Bass and Johns and by Barrett. This consists of a series of daily hypodermic injections of emetin extending over a week, and a subsequent series of three injections a few weeks later. Finally, the use of autogenous vaccines is of great benefit in many cases. An autogenous vaccine is a suspension of killed bacteria obtained from the lesion of the individual to be treated. Vaccines are also administered by hypodermic injection, at intervals of several days, over a period of weeks or months. Their effect is to steadily raise the patient's immunity and thus stimulate him to overcome the infection in and about the lesion of disease. As a rule a dose of vaccine causes no more inconvenience than any hypodermic injection.

Persons with pyorrhea or any tendency toward chronic gingivitis may obtain considerable benefit from the habitual use of a mouth-wash of 1 drop of fluidextract of ipecac to 20 drops of alcohol (or a 5 per cent. solution), a few drops of this being placed in a small amount of water for each occasion. Or a tooth-paste may be prepared with the correct proportion of ipecac in it. (See Appendix.) Ipecac is the drug of which emetin is the active principle. The weakest solutions, as low as 1:200,000, destroy the endamebas. Patients generally notice that the use of ipecac in this manner renders the gums less spongy and tends to stop bleeding. Of course, such a small amount of ipecac can scarcely produce any other effects.

Massage of the gums with the finger is advisable if

done moderately and without undue force. Likewise frequent and vigorous brushing with a stiff-bristled brush.

The best tooth-brush is one having irregular tufts of stiff bristles, a flexible handle, and a perforated back.

THE MOUTH

It has been said that the oral cavity is the most favorable place in the body for bacterial development. A wound in or about the mouth is for this reason very difficult to heal. It is doubtful whether the promiscuous use of antiseptic mouth-washes will accomplish anything more than mechanical cleansing, since neither mouth-washes nor gargles nor other local applications can reach the many little hidden crevices and nooks which harbor germs. If one does employ antiseptic agents it is important to give them sufficient time to act; instead of merely rinsing the mouth or gargling hurriedly, one should hold the solution in the mouth for at least a minute. Antiseptics, it must be remembered, do not kill germs, as strong germicides do; they merely tend to stop the multiplication of germs, and time is required for this.

Canker Sores.—Cankers are small ulcers which occasionally appear in the mouth when local or general hygiene is faulty. Sometimes a slight injury, as by the roughly used tooth-brush, seems to cause a canker; it is probable that some mechanical injury, either from heat or from the teeth or from irritating food particles, is always the direct cause of canker sore. The little raw, white spots give exquisite pain and are slow in healing. It is well to touch the canker sore once a day with a toothpick wrapped with cotton moistened with tincture of iodin full strength, or silver nitrate solution 10 per cent.,

and to rinse the mouth frequently with a warm solution of boric acid or perhaps some alkaline antiseptic solution (National Formulary or see Appendix), diluted with 6 or 8 parts of lukewarm water. Very hot and very cold foods and drinks should be avoided.

Cold Sores.—Herpes, or "cold sores," on the lips or about the mouth often accompany illnesses like pneumonia, but are frequently observed in young people in apparent health. Like herpes elsewhere (such as herpes zoster or "shingles"), cold sores are of nervous origin, a signal that there is some irritation of some branch of the nerve involved. The sores may be touched repeatedly with spirits of camphor, or painted with tincture of benzoin compound, or smeared with a little zinc oxid ointment for protection. Children often show a crop of facial herpes preceding or accompanying an acute indigestion or overindulgence in food.

Bad Taste in Mouth.—Bad teeth, diseased tonsils, chronic nasal catarrhal conditions, chronic disease of one of the accessory nasal sinuses, certain organic diseases of the stomach and lungs, and sometimes some insidious affection of the kidneys or arteriosclerosis (hardening of the arteries) will cause a bad taste in the mouth, most noticeable on rising in the morning. Of course, the underlying cause must be treated. Some benefit may be obtained from the frequent use of pulverized willow charcoal as a dentifrice and one of the ordinary antiseptic solutions, such as that suggested under the heading Canker Sores.

The Salivary Glands.—Three pairs of glands secrete saliva. They are: (1) The parotid glands, under the lobes of the ears (these are the glands affected in mumps), which empty on the cheek in a little papilla opposite the

third molar or wisdom tooth. (2) The sublingual glands, under the tongue, which empty through a number of openings on a ridge on the floor of the mouth. (3) The submaxillary glands, which empty near the openings of the sublingual pair.

The parotid gland duct sometimes becomes obstructed and the saliva accumulates, forming a more or less painful lump inside the cheek opposite the wisdom tooth. The sublingual glands also become obstructed, forming a lump in the floor of the mouth which must be incised and drained.

Salivation is an important part of digestion, the saliva containing a ferment (ptyalin) which converts starch into sugar. Mastication is much more essential for the proper digestion of vegetable foods than it is for the digestion of animal foods. Indeed, there is some ground for the belief that meat digests as well or better when not very thoroughly masticated. This is the way in which carnivorous animals swallow meat; herbivorous animals, on the other hand, always chew their food thoroughly. In laboratory experiments carried out by Turck and others it seemed evident that meat in fairly sizable lumps digested more rapidly than finely ground meat or meat broths; and, furthermore, it was noted that meat broths and finely ground meat offered a better pabulum for the growth of intestinal bacteria and hence favored auto-intoxication. Our personal impression is that one should chew his vegetables very thoroughly, even to the extreme of Fletcherizing, but that one may take one's meat in a hurry if necessary. Not that we would encourage the eating of meat. Goodness knows most everybody eats more meat than his metabolism can care for. But more of that later.

The tongue is a bundle of muscles covered with mucous membrane. A coated tongue is noted in so many different conditions that it can scarcely be interpreted as particularly significant. Volumes have been written about the various types of coated tongue, but only the physician is capable of reading what the tongue discloses, and even he must take the reading in conjunction with other signs and symptoms.

The Tonsils.—Unless it be a protective organ, guarding the body against various infections which may gain entrance through the throat, the function of the tonsil is unknown. We do know that lymphoid tissue, made up of small round cells, constitutes the mass of the tonsils and the adenoid body on the roof of the pharynx, and that lymphoid tissue, wherever found in the body, serves to resist and, in health, to destroy invading germs. This type of tissue is more predominant in youth, and it is, therefore, in young persons that tonsils and adenoids are most frequently diseased. In the appendix, too, lymphoid tissue is abundant, and appendicitis is characteristically a disease of early life.

Infection.—All forms of sore throat, from the simplest so-called "cold" to the most virulent diphtheria, are now considered catching. Indeed, there is little scientific ground for any other explanation of the development of sore throat or tonsillitis. Hence, it is the duty of every responsible person to avoid personal contact with other persons when affected by a sore throat of any kind. If this were the universal rule of conduct, regardless of ordinances or sanitary regulations, a large share of minor ills and a great many serious secondary diseases might be prevented. A rightful interpretation of the golden rule also demands disinfection of all nose and throat dis-

charges in these cases. The best way is to receive the discharge in paper or cloth which can be burned at once. Or the discharges may be received in a basin containing some chemical disinfectant like the compound cresol solution (National Formulary), using about I teaspoonful of this in $\frac{1}{2}$ pint of water.

Carriers.—Unfortunately, a considerable share of apparently healthy individuals, perhaps 5 per cent. of the whole community, habitually harbor in the nose or throat germs capable of causing acute illness in others, though at the moment harmless to the "carrier." It is well known, for instance, that about 2 per cent. of school children have diphtheria bacilli present in nose or throat even though they have never had diphtheria, and Dr. Osler asserts that 20 per cent. of the population harbor virulent, business-like pneumococci—the germs which cause pneumonia, bronchitis, tonsillitis, quinsy, and often ordinary coryza, or, as the public will have it, "cold in the head."

Tonsillitis.—Acute tonsillitis may be a simple inflammation and swelling of one or both the tonsils; or a swelling accompanied by the appearance of white, cheesy masses on the crypts or openings of the tonsils (this is called lacunar or follicular tonsillitis); or quinsy, which is an abscess in or, most frequently, near the tonsil.

Follicular tonsillitis alarms parents because of its resemblance to diphtheria. However, in tonsillitis the child is usually more feverish, the throat is more painful, and the white spots are more yellowish and disseminated than the grayish, dirty-looking membrane in diphtheria. In diphtheria the temperature is usually not so high as in tonsillitis, the throat is not so sore, but yet the child is liable to appear more prostrated. If there is any

doubt, a culture must be taken, though the physician's opinion is unquestionably more reliable than the culture itself, since diphtheria germs may be present in the throat when there is no diphtheria.

Quinsy.—In any case of repeated attacks of tonsillitis quinsy may eventually develop. This is the most painful of all throat affections. The swelling is so intense that the jaws can scarcely be opened and swallowing even liquids becomes almost unbearable. The pain of quinsy characteristically shoots up toward the ears. The voice is characteristically thick. Even clearing the throat is exceedingly painful. The attack lasts a week on the average. Of course, the sooner the throat is lanced and the pus is evacuated, the sooner will recovery ensue. Indeed, early lancing, even when no pus is found, generally gives the patient hours of relief, if not a quick convalescence, and the momentary pain of lancing, as experienced invalids testify, is nothing when compared with the blessed surcease the little operation brings.

Relief of Sore Throat.—Measures which we think applicable in any case of acute sore throat or tonsillitis are: First, fasting for twelve to twenty-four hours, but drinking plenty of water, or, if absolute fasting seems too severe, then reducing the diet to a mere bit of orange-juice, vegetable (never meat) soup, or some similarly light nourishment. Second, cold compress to the front and sides of the throat (see Appendix). Third, an active cathartic, preferably salts (palatable formula will be found in Appendix). We do not advise gargling in acute sore throat, but rather holding the nose shut while the head is thrown back and the solution allowed to bathe the throat without disturbing the parts by the movements of

gargling. This accomplishes all that gargling can do. What solution to use depends upon the condition present. Until the physician prescribes, the choice lies between hot boric acid solution and hot alkaline antiseptic solution (National Formulary) reduced with 6 or 8 parts of hot water. About every fifteen minutes is the proper frequency for rinsing the throat in this way.

When tonsillitis, quinsy, or sore throat recur regularly in a given case it is well to consider the possibility of a latent infection, a smouldering septic focus somewhere in the tonsils. Such a condition not only accounts for repeated attacks of otherwise unexplainable illness, but often proves to be the *causatif* (our personally coined word) in obscure cases of joint disease, bronchitis, asthma, anemia, or other chronic illness. An apparently innocuous tonsil may be the seat of one or several little abscesses which serve as depots of poison supplying the blood with its daily, hourly dose of disease. The physician or nose and throat specialist may be able to express pus or septic matter from the crypts of a tonsil which is not giving and has not for years given any local trouble.

CHAPTER II

THE CATCHING "COLD"

THE March, 1914, number of the monthly "Health News," issued by the New York State Health Department, contained a "health lesson" to be used for the instruction of school children. In the lesson was this statement: "Every cold in the head or other communicable disease comes from a transfer of excreta from one person to another."

When, a few years before that, we ventured to assert that all so-called "colds" were acquired by contact and only by contact, our idea was ridiculed by the majority of editors and other persons who commented upon it. Even some of the eminent members of the medical profession assailed our original thesis and insisted that some "colds"—they did not specify just which ones, nor just what they meant by "colds"—were caused by exposure to cold or damp weather, chilling of the body, wet feet, and the like, and that our advocacy of drafts as indispensable in good ventilation was nothing less than absurd.

The above quotation from an authoritative source may be taken as the present practical professional view of the cause of "colds." We feel that it is no longer necessary to cite evidence in support of a view accepted and taught by the Health Department of New York State, but it will not be out of place here to offer logical explanations for a few of the delusions still retained by many persons regarding the way in which "colds" are contracted.

In the first place, we must remember that our ancestors attributed a lot more to exposure and cold weather than In the early part of the last century we have ever done. pneumonia, rheumatism, tuberculosis, and even diphtheria were all alike "colds" or the result of "taking cold." But as our knowledge of these various infections has accumulated, we have learned to think of them as independent of weather or atmospheric conditions, at least in so far as direct influence goes. It is true that even today a great many alleged "colds" turn out to be something very definite and unexpected when the physician is finally able to make a real diagnosis. It is equally true that a "slight cold" or a "heavy cold" still serves a very useful purpose as a sort of diagnostic tool in the hands of some doctors, because the "grand old public," if we may be pardoned the epithet, still looks upon a "cold" as a definite entity, a sort of chameleon ailment which may conventionally "change" or "turn to" almost any disease in the curriculum overnight—and without apology!

Of course, as a matter of fact, no competent physician utilizes the term "cold" in a scientific company. Were a doctor to stand up in a medical society meeting and remark that Case 45 contracted a heavy cold which settled in the region of the diaphragm, his audience would be either greatly amused or indescribably bored.

Why Is a Chill?—As Dr. Osler remarks in his text-book on "The Practice of Medicine"—which has been called "the physician's bible"—the chill which so frequently marks the onset of pneumonia is one of the greatest props of the catching cold idea. Many different infections of a severe character are likewise characterized by a chill at the onset. Malaria, acute septicemia (blood-poisoning),

erysipelas, severe puerperal infection (childbed fever), these bacterial invasions, like pneumonia, are characterized by an incipient chill or by chilliness at the onset.

Taking lobar pneumonia (also called pleuropneumonia) as the type of acute bacterial infections, the introductory chill may be considered a favorable sign, at least it is more favorable than would be the same disease without the introductory chill. The chill is produced by a rather sudden withdrawal of blood from the surface, a mobilization of the blood-cells, the body's natural defenders, at the seat of invasion, the lungs. During the chill, if the temperature is taken, the battle is seen to be under way, for the thermometer invariably registers several degrees above the normal—that is, if the patient is putting up a fair fight against the invading horde of pneumonia germs. Now, if the chill were produced by exposure or cold weather or any purely physical cause, the body temperature would not be elevated, because it is a well-known fact that a mere internal congestion, such as might conceivably occur from exposure to severe cold under certain conditions, never causes a rise of body temperature, but rather a lowering of temperature, as in freezing. Only inflammatory reaction can produce elevation of body temperature, and nowadays it is a commonly accepted principle that elevation of body temperature signifies bacterial invasion every time. (Of course, sunstroke and certain laboratory experiments can produce extreme rise of body temperature.)

In the very aged, the very weak, or exhausted individual, and notoriously in the alcoholic debauchee the onset of pneumonia, as of other serious infections, is apt to occur insidiously without the incipient chill, perhaps without noticeable pain or cough. That is to say, the

individual's state of preparedness is such that the invading hordes overwhelm and destroy him without meeting any resistance from his white blood-cells and other defenses. Hence, it often happens that an intoxicated person with pneumonia is found wandering about aimlessly, delirious or more or less comatose, charged with being "drunk"—because of the alcohol odor on his breath—and thrown into a jail cell without medical examination, there to die like an animal because of the assurance of ignorant officials.

The chill or chilliness which marks the onset of pneumonia, bronchitis, coryza ("cold" in the head), and tonsillitis should be considered a symptom, not a cause, of the disease, and a favorable symptom at that. In diphtheria chilliness at onset is conspicuous rather by its absence—and everybody knows that the body puts up a better fight against tonsillitis or quinsy than it does against diphtheria.

Calling a Cold a Cold.—Another prop that still supports the tottering "cold" phobia is the familiar fact that one subject to simple chronic rhinitis, or "catarrh," in which the spongy turbinate bodies of the nose lose their normal flexibility and adaptability to mechanical alterations of the blood-supply, feels a stuffiness or stoppage of nasal breathing very promptly when exposed to slight change of weather, dampness, cold drafts, wet feet, or any of the popular factors of "colds." This congestion of the nose, however, is by no means "a cold," although the victim invariably says: "Oh, dear, I'm taking cold; I must get out of the draft!" or "I must hurry and get dry things on, for I feel a cold coming." We say it isn't "a cold." It isn't coryza or acute rhinitis. It is a mere temporary mechanical condition which disappears within

an hour or two or as soon as usual environmental factors are restored. "A cold"—coryza—is an illness which, once it begins, is bound to remain right on the job in a very positive and business-like way for a few days at least.

Now from general experience, not as a specialist, we believe that about half of the people with whom physicians are much associated have more or less chronic rhinitis or "catarrhal trouble." Indeed, it is a rare experience for a doctor to examine a patient's nares and find normal conditions there; either a simple chronic rhinitis, or hypertrophic catarrh, or some abnormality of the cartilaginous septum, or involvement of one or more of the nasal accessory sinuses (sinusitis), or the remains of old adenoids—there is very apt to be something wrong. Of course, a doctor doesn't see the normal individual—the healthy individual has not yet learned the wisdom of seeing the doctor annually. But, at any rate, a surprisingly large number of people have more or less "catarrh," and it is the hypersensitiveness of the abnormal nose and throat that makes these people think themselves always ready to "take cold."

That wet feet, drafts, damp clothing, and exposure, in the usual sense of the word, do not even predispose one to the respiratory infections called "colds" we feel convinced from long observation and personal experience. Indeed, it is our custom to advise that the only precaution one need take against "exposure" of that kind is what common sense directs: As long as you feel physically comfortable you'll come to no harm, no matter what the conditions of exposure may be. Note, please, that we say "physically comfortable"; there are so many well-meaning old souls from fifteen to eighty years of age

who feel mentally uncomfortable if they even suspect there is a draft in the neighborhood! As for the children. we believe that what is good enough for our own children is good enough for all. When a child enjoys "exposure" it can only do him good, though he plays in the puddle all day. If he is not a moron he knows enough to come in and get warm when he is uncomfortable. And as for the wee, wee folk, the poor, helpless, house-bred babies, no class of useful citizens is denied fresh air like these, and certainly no other human beings need fresh air as sorely as the young babies. Surely, after the first month of this sad life, what is good for a mother is good for the baby, so far as atmospheric conditions go. We have never heard of a baby suffering ill consequences from a daily airing, but we have seen many a baby done to death by household warmth and devitalized air.

The Real Predisposing Factors of "Colds."—Enough has been said about what doesn't cause "colds." Now let us see what it is that makes one individual more liable than another to pick up "cold" germs and suffer from an attack of coryza, sore throat, or other respiratory infection.

Here we reach a point upon which we fear the consensus of medical opinion is not sufficiently crystallized to permit brief abstraction, the present conception of "colds" being rather too new to find its way into the standard text-books of medicine. So we shall have to state our personal opinion, and trust that we are correctly interpreting the belief of the day.

It is a question whether the respiratory diseases are more common among people in the temperate zone than among those in the warmer zone to the south, but it is well known that these infections become more and more rare as you approach the poles of the earth, pneumonia being an unknown disease in the far north. We recall vividly a fatal epidemic of pneumonia among a troup of Eskimos brought to the Pan-American Exposition in Buffalo in May and June, 1901. These poor people had never seen such a disease at home; but they succumbed to its ravages very soon after arriving on the Midway and taking up their unaccustomed abode in frame houses or shacks.

Dr. Gorgas, after a thorough investigation of the pneumonia epidemic which alarmed the authorities at Panama, decided that close crowding in sleeping quarters was the principal factor. He made the special observation that laborers sleeping in damp clothing or in bunks exposed to drafts were no more liable to have the disease than others. He put a stop to the epidemic by having the laborers housed in smaller individual shacks instead of the community barracks. Dr. Gorgas made a similar investigation on The Rand, the great South African mining section, at the invitation of the British Government, and there, too, he showed that the disease could be stamped out by the simple expedient of spreading the men over more territory-having them housed in smaller groups, so that they were not thrown into such intimate contact and they breathed purer air.

With but few exceptions, all the people we have known who put aside their catching-cold phobia and adopted the porch bedroom habit and the open-air habit in general, are gratified to discover that they have acquired an immunity never before possessed.

In general practice there is no doubt whatever that the indoor workers, the house-bred children, the fireside valetudinarians, and those who most avoid "exposure" and the weather are the very ones most frequently down with "colds." But that, you will say, is neither pro nor con. It is perhaps mostly "con"! Our opinion is that it is quite as strong an argument as the layman's, when he avers that he got caught in a cold rain yesterday or last week, took a chill, and developed pneumonia. But, of course, we are biased, fanatical, insane—we are carrying our theory to extremes—making a hobby of it—our critics have formally charged all these things against us.

Crowding—implying unnecessarily intimate contact. Lack of ventilation—implying the foolish effort to keep warm by imprisoning vitiated air in living apartments. Overheating—implying a futile endeavor to make the air of our living apartments do what proper clothing and exercise and food should do for us. Overeating—implying auto-intoxication and its attendant embarrassment to the circulation. And finally, unhygienic clothing—implying an undue strain upon the great vasomotor nervous system which controls circulation and exerts such an important influence upon the body's natural defenses. These, in our personal belief, constitute the predisposing factors which make one susceptible to the germs of the catching "cold."

Various Germs Cause "Colds."—If the term "cold" were applied to just one particular condition, like coryza, it would not be so objectionable except for its misleading significance. But, unfortunately, one never knows what another means when "a cold" is mentioned, and that is why the term should be dropped.

There are a number of different species of bacteria known to produce coryza, bronchitis, sore throat, and other acute respiratory infections. The pneumococcus is perhaps the most common offender, because fully 20 per cent. of us harbor virulent pneumococci in the mouth habitually, whether we are ourselves susceptible or not. The Bacillus influenzæ, one of the "la grippe" germs, is another. Then there are several species of staphylococcus, streptococcus, micrococcus, and bacilli recognized as causes of different "colds." Even the Bacillus diphtheriæ may cause what amounts to nothing more than a running nose, especially a one-sided running at the nose, in children. And in a schoolroom such a child must be looked upon with suspicion in case of a sudden outbreak of diphtheria.

Prevention by Isolation.—We have children in school, and are, therefore, personally interested in the welfare of school children. We heartily believe that it should be a universal rule to send every child home at once upon the appearance of a running nose, a sore throat, a frequent sneezing, or a noticeable cough. This idea, too, has been bandied about as a good joke by the newspaper paragraphers and the magazine commentators. When our little one comes marching home with a noseful of somebody's microbes we don't think it is any joke at all, leastwise not until we see whether the "cold" will turn out to be infantile paralysis, typhoid fever, diphtheria, whooping-cough, measles, or whatever. If the teacher should send our youngsters home on account of a running nose or a fresh sneeze we should feel under obligations to her for showing consideration for our children's physical welfare at any rate. Balanced against the value of personal health, we don't care a picayune for a few days' absence from school in our family. But, then, we are not like other people, the old folks say!

Every case that looks at all like a simple "cold"—some of them look very simple at first, haven't you no-

ticed?—should be isolated. Now, we are not rabid on the subject at all, but simply determined. By isolation we do not mean that the victim must be imprisoned in a room or cut off from communication with the world. We mean that the person who has a "cold" of any kind should keep away from other persons, several feet away, that is all that is necessary. No germ can jump a space of more than four feet in the droplets of spray from ordinary conversation. And all germs that fail to land on the first jump die an ignoble death from starvation, sunstroke, freezing, or desiccation, we believe, at least under ordinary circumstances. Of course, one with a "cold," be it ever so slight, is morally bound to avoid kissing anybody or fondling children, or otherwise infecting people by close contact, as in exchanging pencils, handkerchiefs, or, in short, swapping saliva in any of the conventional For instance, think of the possibilities of a streetcar conductor who licks his transfers, or a postal clerk who licks your stamps (by wetting his finger with saliva), or a ten-cent store clerk who licks your change, or a program boy who insalivates your theater program, or a waiter who thumbs the soup!

As for disinfection, it is but fair that handkerchiefs be disinfected before they are sent to the wash. Boiling, direct sunlight, or one of the chemical disinfectant solutions may be used. (See Appendix.)

Treatment of Colds.—In general, for the average person, a fast is the first remedy, from twelve to twenty-four hours. A saline cathartic is usually helpful too. A hot mustard foot-bath in bed, or a full hot bath just before jumping into a warm bed. Then large hot drinks of lemonade or very hot tea, ginger tea or plain hot water, with a cold wet compress over the head and hot bottles,

and loads and loads of blankets over you to make you sweat.

We think Dover's powder only postpones and prolongs trouble. Opium is a bad remedy for a simple ailment. Instead, a course of sweet spirits of niter (freshly obtained) may be taken—for an adult half a teaspoonful in a little cold water every half-hour or hour for six or eight doses or until freely perspiring.

It may be only imaginary, but we fancy that an ordinary "cold" clears up more rapidly if a dose or two of hexamethylenamin (U. S. P.) is taken at the outset. For an adult from 20 to 30 grains dissolved in half a glassful of water, taken twice only, night and morning. This drug exerts an antiseptic action in the nasal secretions.

A person with a "cold" or just getting over one should wear no more than he ordinarily does. Coddling is a habit that never improved anybody's health.

Since you never can tell what your apparently simple "cold" will be tomorrow, the wisest plan is to take it to your physician and let him assume the responsibility. All is not "cold" that shivers, but pretty nearly everything is catching that snuffles.

Persons who "take cold" very easily or have frequent coryza usually are affected with some chronic nasal or throat trouble which demands medical attention. The questions of dress, bathing, local treatment, ventilation, heating, and exercise, as bearing upon respiratory disease, will be discussed in other chapters.

CHAPTER III

ADENOIDS AND TONSILS

Surrounding the common gateway of the eating and breathing passage is a broken ring of adenoid, or small round cell tissue, made up of the two faucial tonsils, the pharyngeal tonsil (the adenoid body) and the lingual tonsil. The faucial tonsils, as is well known, are situated one on either side of the throat; the pharyngeal tonsil, or adenoid body, is situated upon the back wall and roof of the throat, up out of sight behind the uvula or soft palate; and the lingual tonsil is a mass of adenoid tissue well back on the base of the tongue.

It is believed that the function of this ring of adenoid tissue, so peculiarly placed about the air and food inlet of the body, is a protective one; that it localizes and resists infections gaining entrance through the nose or mouth. At any rate, any one or more of the four tonsils may become inflamed, swollen, or chronically diseased as a result of single or repeated infections.

Cause of Enlarged Tonsils and Adenoids.—A great deal has been said and done in school and elsewhere about the importance of recognizing and surgically treating enlarged tonsils and adenoids in children. But rarely, if ever, so far as the writer is aware, has anything been said or done in the way of prophylaxis.

The present consensus of opinion is that simple enlargement of the tonsils is caused largely in two ways: By digestive troubles in children from five to fifteen years old—digestive troubles directly attributable to carelessness in regulating the diet; and by repeated attacks of so-called "cold" in the head or sore throat—infections directly attributable to carelessness about personal sanitation and the hygiene of the home.

As for the digestive disturbances, that is a factor which the English medical authorities dwell upon rather more than American authorities do. It is, of course, a familiar fact that excesses of the diet do promptly aggravate any chronic nose, throat, or bronchial trouble. This is probably to be accounted for by the intimate relation between the great portal system of veins draining the digestive tract and the veins draining the gullet, throat, and nose. When the portal area is engorged the nose, throat, and chest are more or less congested as a result. It is this backflow or engorgement attendant upon portal congestion that is so markedly relieved by an active cathartic, like salts, which unloads the portal area and relieves the back pressure of blood in the nose and throat.

But in the absence of the infective primary cause—the repeated "cold"—these mechanical factors could scarcely give much trouble. Personally, we doubt whether digestive disturbances can be considered more than a contributing factor of enlarged tonsils or adenoids. But here, again, our extreme bias must be taken into consideration, and due respect given the stated opinions of eminently qualified experts.

In any event, there can be no question that a great many children and young adults whose diet is properly regulated do suffer with adenoids and tonsils. One attack of sore throat or "cold" after another, throughout a season or two, adds to the insult; the protective function of the lymphoid or adenoid tissue is taxed to the utmost in fighting the invading "cold" germs; first physiologic hypertrophy or overgrowth ensues as a natural effort to meet the demands; then ultimately this overgrowth remains between attacks, becomes permanent, and we say the child has "adenoids and tonsils," or adenoid hypertrophy and enlarged tonsils.

Effects of Enlarged Tonsils and Adenoids.—Among the more serious effects of enlarged tonsils and adenoids are deafness or chronic disease of the middle (the "inner") ear, with its ever-present danger of mastoiditis or involvement of the brain itself; faulty development of the face, due to the abnormal mouth-breathing; and faulty development of the chest, due to inadequate expansion because of the obstruction to normal breathing.

Symptoms of enlarged tonsils are more or less inseparable from those of adenoid hypertrophy. The facial expression is suggestive—a peculiar drawn look, open mouth, short upper lip, exposed or prominent upper teeth, short or retracted lower jaw, dull or hollow eyes. There may be slight dulness of hearing, perhaps amounting to an apparent inattentiveness. Too often the child is considered stupid because of the listless expression and the bad hearing. A child whose hearing is not normal cannot be expected to make as rapid progress in school work as the normal child.

Besides these symptoms, a very high arching of the bony palate may be noted. If the trouble has been present any considerable length of time the chest will be more or less "pigeon-breasted"—that is to say, very narrow, but bulging over the breast bone like a pigeon's breast. Or there may be a "funnel-breast"—a marked depression at the lower end of the breast bone. These

deformities are the result of prolonged negative pressure in the chest from the obstruction to free expansion.

The child has frequent slight sore throat or "colds." The voice is more or less dead in tone. At night there is always loud snoring, restless tossing about, sometimes sleeping in strange postures, as with the hips high and the head low, very often bed-wetting, night terrors, and attacks of croup.

None of these signs or symptoms can suffice to determine a diagnosis of adenoids. They might come from other obstructive conditions of nose and throat. The only way in which adenoids can be positively diagnosed is by medical examination. The physician must either see the adenoid overgrowth by the aid of a throat mirror or, in younger children or babies, he must feel the growth with a finger inserted through the mouth into the pharynx.

Prevention of Adenoids and Enlarged Tonsils.— At the risk of tiresome repetition we must here once more emphasize the primary cause of this condition—infection, or rather, repeated infections in the shape of "colds" and sore throat.

Professional data upon the prophylaxis of adenoids and enlarged tonsils being so meager, we must again obtrude our personal views.

If children were taught to avoid, and properly guarded from, close contact with persons evidently suffering with a "cold" or sore throat, we are quite sure that a great many "tonsil and adenoid" operations might be avoided. Exchanging pencils, whistles, and other objects or playthings which may easily become contaminated with saliva should be frowned upon. Little ones with a snuffle, sneeze, or cough coming to play should be sent

home until well. And, above all, children should never sleep together or with older persons.

Much blame is to be placed upon the public school. We consider the school-room a very strong factor of adenoids. It is regretable that the question of temperature and ventilation in the school-room is usually left to the whims of the teacher, the principal, the board of education, or an architect, instead of a physician or the health department. One teacher or architect or board will decide on somebody's patent flue system of ventilation, and rule that the windows of the school-room are never to be opened, because opening the windows interferes with the delicate working of the patent ventilators! Another teacher or architect or board will fix on 72° F. as a proper school-room temperature and regulate the heating accordingly. From 65° to 68° F. should be the ideal school-room or factory temperature. Anything higher than this simply favors the accumulation of what is called "bad air." Overheating the air in school, at home, in cars, and elsewhere is a distinct contributing cause of "colds," sore throat, and adenoids in the writer's experience.

Coddling the throat or chest is another misguided habit that favors these troubles. As long as people continue to think of a "cold" as something that enters via the skin, children and other helpless creatures will no doubt be coddled with "chest protectors" that do not protect, and throat mufflers that belie their name. Except when the conventional red rag serves as a fair warning to innocent bystanders to keep their distance from a real source of danger, the muffled, mollycoddled child always inspires our sympathy.

In general practice, it has seemed that a considerable share of adenoid and tonsil cases responded to general hygiene plus suitable local treatment by the doctor for the chronic rhinitis or "catarrh" which almost invariably accompanies or precedes a frank condition of adenoids. We do not mean to imply that surgical treatment can be obviated in an established case of adenoids by nonsurgical measures. That would be unfair to the child. But it is certain that many borderland cases, in which the physician honestly hesitates as to the expediency of operation, can be benefited and ultimately restored to health by hygienic and local attention.

The reader is referred to chapters dealing with the subject of clothing and those upon ventilation and "colds." It is enough to add here the statement that in spite of popular misapprehensions, adenoids and enlarged tonsils are, like "colds," a penalty of *indoor life*, and should be looked upon as part and parcel of "The Great Indoor Plague." The only reason in the world why these ailments prevail mostly during the winter and spring months is this—during the colder months of the year our bodies are coddled, both by excessive clothing and by excessive artificial warmth.

A remedial measure suggested by the eminent pediatrician, Dr. Abraham Jacobi, is the daily irrigation of the nasal passages with normal salt solution. This is a procedure which a mother can learn from a doctor or nurse and one which a child soon grows to enjoy.

In some cases the doctor can prescribe medicine to be dropped into the nose for local effect.

Operation for Adenoids and Enlarged Tonsils.—For the relief of an established case of adenoids and enlarged tonsils there can be no efficient substitute for surgical operation. This may be done by any competent physician or by a nose and throat specialist. It may be performed safely in the average home, though perhaps at less expense in the hospital. At the longest, it is necessary for the patient to stay in the hospital only a day or two.

People often hesitate to have children operated on, fearing the anesthetic. From the thousands of operations done for adenoids and enlarged tonsils it can be definitely stated that while there is always some slight risk involved in surgical anesthesia, no matter how administered or by whom, still the risk of operation is far less than the risk of the condition allowed to go untreated. It is a great injustice to a child handicapped with such a condition when parents postpone a necessary operation through mere timidity. We have observed a large number of little patients operated on for adenoids and tonsils, and while the operation sometimes fails to bring all the benefits anticipated, it never leaves any regrets: as a general rule, the timid parents who put off the operation until the ultimate day are the very ones who become selfconstituted missionaries on behalf of other people's children later on. In older children it is sometimes possible to remove adenoids without a general anesthetic, the operation being done as quickly and as painlessly as the extraction of a tooth under a local anesthetic.

CHAPTER IV

CATARRHAL CONDITIONS

A Popular Misapprehension.—Judging by the seductive wording of the patent-medicine advertisement, and by the queries propounded by patients, it would seem that there is a popular misapprehension, perhaps founded on ancient medical belief, that "catarrh" is a definite disease or an entity having special distinction from the various pathologic conditions which may affect regions lined by mucous membrane. If that were true it would not be utterly inane to speak of a "catarrh cure" or of "treatment for catarrh." Nor could we impugn the motives of the charlatan or nostrum maker who tells us in print that "catarrh must be reached by local medicaments" or "catarrh is caused by humors in the blood and must be reached by internal treatment."

The fact is that the word "catarrh" is about as loosely applied as is "a cold" or "rheumatism." Any inflammation of a mucous membrane anywhere in the body, acute or chronic, regardless of the cause or nature of the condition, may properly be referred to as "catarrhal." But that signifies nothing. In order to know what one is talking about it is necessary to be more specific; for instance, instead of saying "catarrhal trouble in one apex of the lung," one should say tuberculosis—if that is what is the matter. Or instead of saying "catarrh of the stomach," one should say ulcer, cancer, chronic gastritis, or whatever else one may mean. Instead of saying

"catarrh of the bladder" one should say enlarged prostate, cystitis, stone in the bladder; or whatever else it may really be. And so, instead of saying "catarrh of the head" or "nasal catarrh," one should say adenoid, polyp, thickened turbinate, sinusitis, simple rhinitis, or whatever one may mean. It is only too obvious that these various conditions are utterly different in cause and effect, and that no one method or means of treatment can possibly help them all. Hence the meaninglessness of "catarrh" is a matter which merits the understanding of the public.

In practice it is the custom to refer to a common condition of the nasal cavity—chronic rhinitis—as "catarrh." We speak of "simple catarrh," meaning a simple chronic inflammation of the lining of the nose; or "hypertrophic catarrh," meaning a chronic inflammation with thickening or overgrowth of the lining of the nose; and, finally, there is the condition called "atrophic catarrh" or "ozena," in which shrinkage or atrophy has progressed to the extent of permanent destruction of tissue, and this fortunately rare form of "catarrh" is the kind which is accompanied by a very offensive odor unless under vigorous and continual treatment.

Simple Chronic Rhinitis.—The most frequent condition observed by the family physician is perhaps simple chronic catarrh. This occurs in children and young adults. The symptoms complained of are, in order: Very frequent coryza or "cold" in the head. Breathing more or less difficult through nose on first going out from a warm place into the cold air. Stuffiness of the nose. Excessive nasal discharge. Hawking and spitting up mucus from the back of the nose. Perhaps redness of eyelids. Sometimes a tendency to sneeze a great deal, or maybe a chronic cough.

On examination of the nasal lining by means of the speculum and head mirror the doctor finds a uniform congestion, a thick, sticky secretion which is hard to remove from the floor of the nasal passage, and swelling or intumescence of the turbinate or spongy bodies of the nose which dents on pressure and shrinks readily under suitable astringents.

In this form of catarrh a little local treatment in conjunction with general hygienic measures will usually bring complete relief after a few months. By local treatment we do not mean merely spraying the nasal cavity, but applications made to the spongy bodies and nasal lining by the doctor in his office. This is generally done every second or third day for a period of weeks, depending on the degree and duration of the trouble.

Hypertrophic Catarrh.—If neglected, or if the causative conditions are not removed, simple chronic rhinitis will eventually progress to the stage of hypertrophy, in which the turbinate or spongy bodies and the nasal lining become actually enlarged from the deposit of new tissue. This is called hypertrophic rhinitis (*rhino*, nose; *itis*, inflammation).

The symptoms complained of in hypertrophic rhinitis are the same as those noted under simple rhinitis. In addition, the patient may notice that one nostril is always obstructed and he may have frontal headaches frequently. The voice is apt to be rather thick. More or less deafness, from secondary involvement of the eustachian tube, or watery eyes, from obstruction of the tear duct which drains into the nasal passage, is often noted.

Examination of the nasal lining shows it to be generally thickened, particularly the spongy bodies, and this swelling does not dent on pressure nor shrink notice-

ably under astringents. In many cases the spongy body on one side impinges against the cartilaginous septum or partition; and very commonly the septum itself is found distorted, bulging over to one side, either from pressure or from some former injury to the nose.

Treatment of Chronic Hypertrophic Rhinitis.—While prolonged and faithful local treatment by the experienced physician or specialist can, and does, in some cases accomplish much good in hypertrophic catarrh, in conjunction with proper general measures, of course, it is nevertheless necessary in the majority of cases to resort to more radical agencies, such as cauterants, puncture, and excision of portions or all of a turbinate, or operative correction of a distorted septum, or snaring off the posterior polypoid thickening of a turbinate body.

"Cutting a Bone Out of the Nose."—People go to the doctor and have "a bone cut out of the nose"—which generally means the removal of a portion of a turbinate body. Now the turbinate bodies, three on each side, have a framework of scroll-like bone, covered over by a very vascular mucous membrane, which has a very important function—namely, to serve as a sort of natural steam heat radiator for the incoming current of air, also to moisten the incoming air and perhaps to wash out dust and bacteria. These active spongy bodies naturally fill with blood and swell up considerably when it is cold and damp—that is why a nose is more "stuffy" when it is cold and damp. If the bodies are diseased their function is necessarily poorly performed and the air reaches the larynx and enters the chest in an unprepared condition—too cold or too dry or too damp, for instance. This would obviously cause irritation of the breathing passages farther along, and thus it happens that the victim of chronic catarrh is more liable to develop chronic bronchitis later on.

The bone which the surgeon cuts out of the nose is a normal structure which has become more or less diseased. It is a calamity, not a blessing, to get rid of a turbinate or any part of it. But when badly diseased one might better have the damaged portion removed perhaps. Nevertheless, we do not hesitate to say that a disgracefully large share of these nasal operations are performed with little reason and less benefit to the patient in his subsequent history. Worse still, some of our very busy and very eminent nose and throat specialists. who lack the preliminary general experience a specialist should have, are accustomed to removing turbinate bodies without ever advising the patient about general hygiene. They work on the principle that there is an obstacle to breathing, that this obstruction can be hacked out in a few moments under local anesthesia without giving much pain, and the result is free breathing. But they do not see the patient months or years later, because he may not care to return for further treatment of that kind.

Atrophic Catarrh.—After years of untreated or improperly treated simple catarrh, particularly cases in which there is a purulent discharge instead of a mucous discharge, a progressive shrinkage or atrophy of the nasal lining ensues in certain cases, and, owing to the diminution of secretion, the membrane becomes dry, thin, and covered with crusts and scabs. This is accompanied, of course, by more or less offensive odor quite characteristic of the condition, owing to the retained dry secretion. A few such cases are syphilitic.

The Accessory Sinuses.—Complicating the different types of nasal catarrh or independently of catarrh a not

uncommon condition is inflammation of one or another of the air-spaces within the skull bone which communicate with the nasal cavity. There are four pairs of these sinuses—a maxillary antrum, within each side of the upper jaw bone; the frontal pair, within the brow right over the orbit; the sphenoidal cells and the ethmoidal cells, in the base of the skull farther back over the roof of the nose.

An acute inflammation of one of these sinuses, called sinusitis, is usually exceedingly painful and often mistaken for "neuralgia" of the face or forehead. Unlike neuralgia, the pain is likely to show a periodicity, coming on at a certain hour, increasing up to a certain hour, then diminishing, and finally passing away at a certain hour each day.

Sometimes the inflammation becomes purulent (pus producing), and that is a serious state of affairs demanding surgical relief, because of the danger of involvement of the meningeal covering of the brain (meningitis) or the brain itself (brain abscess).

Nasal Polypus.—Another common condition seen in cases of catarrh is polyp. This is a grape-like mass with a small pedicle attaching it to the turbinate body. It gives characteristic symptoms in many cases—attacks of sneezing and marked obstruction of one side of the nose in damp weather. The only treatment is snaring, which is done painlessly under a local anesthetic.

General Causes of Catarrhal Conditions of the Nose and Throat.—Now why do so many of us have these various chronic troubles called "catarrh"? We shall briefly state what we consider the underlying causes. We have already touched upon them in preceding chapters. First, all our respiratory diseases, from the mildest

coryza to the most virulent diphtheria, including pneumonia and constipation, must be looked upon as house diseases. They are diseases which the artificialities of civilization bring upon us, for savage tribes, uncontaminated by contact with civilized invaders, are free from, though not immune to, the respiratory infections.

Overheating, we believe, is the chief predisposing factor of the catarrhal troubles. It is a recent observation of Prof. Hill and others that what is commonly known as "bad air" or "impure air" is air which is too warm and too still. Healthy young students were placed in an airtight compartment and observed while the temperature was gradually raised. They developed the familiar symptoms of persons breathing "impure air"—yawning, drowsiness, dull headache, and an inclination to nausea. When the temperature of the air was lowered, without admitting any fresh air to the chamber, they felt refreshed and the symptoms passed off. Putting the confined air into motion by means of electric fans also relieved or postponed the symptoms. This proves that warmth and absence of movement in the air constitute the really depressing factors of impure air.

Householders and, in fact, those responsible for the heating arrangements everywhere endeavor to economize by shutting out the cold air so far as possible in the winter months. Many, too, have a fear of drafts. And a few, we regret to say, still object to breathing the dread "night air" until it has been thoroughly denaturized by the stove or furnace. All of these little delusions and phobias, handed down to us by our benighted ancestors, combine to rob us of the boon of fresh air. In most homes, to say nothing of railway cars, street cars, theaters, churches, office buildings, factories, schools, and shops,



the temperature is kept above a reasonably comfortable point most of the time in cold weather. A reasonably comfortable point, we have concluded from wide observation, is between 65° and 68° F., never higher, but lower if desired. It is largely a matter of habit, and a habit formed in one season at that. If you start in at the beginning of the season regulating your heating by the aid of a thermometer or, still better, a good thermostat, instead of taking your own or another's personal sensations as the guide, you will get on very comfortably all winter with a moderate temperature and improve your health in the bargain. But how the coal man will hate you!

Lack of ventilation, a fault that hinges upon the question of room temperature and the popular fear of "taking cold," is another important factor of catarrhal troubles. The subject will be dealt with in detail in another place.

Coddling and unhygienic clothing come next in the list of causative factors. This too is closely bound up with the question of "taking cold." We will discuss the hygienic features of clothing in a separate chapter. Here it is only necessary to allude to the common error of wearing fleece-lined or other non-porous underclothes in the futile effort to keep out the cold, and the bad habit of putting on clothing which physical comfort does not require.

Overeating and intemperance must be included among the causes of catarrhal troubles. The modus operandi of excesses of this kind may be explained, first, by the mechanical congestion of the nose and throat produced by the back pressure of blood from the great portal area in the abdomen, which is always engorged in heavy eaters and alcohol habitués. The auto-intoxication and exhaustion of body energy from these excesses also exerts an effect in the development of catarrhal troubles. It is trite but true to say that we eat too much, even when we would earnestly wish to reduce our intake of fuel.

Finally, the individual who has any of the various troubles included under the name of "catarrh" will do well to be temperate in eating, a total abstainer as regards alcohol and tobacco, an open-air valetudinarian, a porch bedroom sleeper, or at least an open bedroom window advocate; walk at least two miles a day, avoid warm rooms, and keep the bowels active.

CHAPTER V

THE EYES, VISION, AND ILLUMINATION

Structure of the Eye.—The eyeball is moved in its socket by six different muscles. One attached at the right and one at the left of the eyeball turn it to right or left as do the reins of a harness. One above and one below similarly attached elevate or lower the eyeball. Then there are two oblique muscles acting upon each eyeball. If the inner rectus muscles (the inside reins) become shortened the individual is "cross-eyed." If the outer rectus muscles (the outside reins) are too short the individual looks "wall-eyed." Either of these conditions may be corrected by cutting and lengthening the tendons of the shortened muscles, an operation done painlessly and very quickly under cocain. In some cases cross-eyes or wall-eyes may be successfully treated by glasses alone.

The eye should be considered a camera. It has an iris-diaphragm automatically active, a self-focusing lens, and a sensitive film which requires no changing. The iris is a muscle-controlled curtain surrounding the pupil. The iris gives the eye its color—blue, gray, brown or black, as we say, but, in reality, all varying degrees of brownish pigmentation. The pupil looks large in the dark, contracts in the light; it dilates when one looks off at a distant object and contracts when one looks at a near object—a self-adjusting iris-diaphragm. This power of the iris to alter the size of the pupil—to regulate

the amount of light admitted to the sensitive film or retina—is called the "accommodation of vision." In certain diseases of the nervous system, as well as troubles in the eye itself, the power of accommodation may be affected. Thus, in locomotor ataxia the pupil is slow or unable to react to light—it fails to contract when a bright light is held before the eye.

The outer coat of the eye is the sclerotic coat, a hard, tough, unyielding sort of skeleton for the soft and vulnerable globe of the eye. The sclerotic is called "the white of the eye." To it the muscles of the eyeball are attached. In the rear it is continuous with the sheath of the optic nerve and with the outer membrane of the brain (dura mater). In the front it passes into the cornea over the iris and pupil, becoming transparent. The cornea projects from the eyeball like the crystal of a watch or the lens of a bull's-eye lantern.

If the cornea, the window of the eye, becomes scratched roughened, scarred, or in any way damaged the vision will be impaired. The slightest injury, as by a speck of cinder or emery or other irritating substance, is capable of causing a minute ulcer or raw place on the cornea, which, though scarcely visible to the naked eye, may terminate disastrously. Hence, it is wise to go to a physician to have such things removed from the eye and not allow inexperienced hands to attempt it.

The second coat of the eye is the choroid coat, composed mostly of blood-vessels. It is the framework supplying nourishment to the various parts of the eye. The visible iris is the extreme forward part of the choroid.

Blue-eyed Blonds and Albinos.—The degree of pigmentation of the iris determines the color of the eyes. Black eyes are most heavily pigmented; brown eyes come next; blue eyes next, and the least pigmented eye is that of the Albino. Here the iris is almost colorless. It admits light excessively, and hence an Albino is always sensitive to bright light. Likewise a blond, who has blue eyes as a rule, cannot endure strong light as well as a brunette with brown or black eyes. The Albino appears to have "pink" eyes, for the reason that the inside of the eye, which is naturally pink in all eyes, shows through the unpigmented iris.

Common Eye Troubles.—Foreign bodies in the eye should be removed, if possible, by washing them out with warm normal salt solution (tablespoonful of salt dissolved in a pint of freshly boiled water) which may be freely flowed over the eyeball and through the lid sac by means of a medicine- or eye-dropper. If this fails, a bit of soft cloth moistened with the solution may be used. Never use wooden or metal objects—that is a task safe only for the physician.

When a cinder or other foreign body is embedded in the sclerotic or "white" of the eye, or in the cornea or transparent part of the eye, then it is worse than folly to attempt its removal with crude instruments. Many a serious ulcer of the cornea or other destructive result follows such efforts. The condition requires, first, a local anesthetic and, second, removal by suitable instruments in skilled hands.

Conjunctivitis means inflammation of the conjunctiva or lining of the lids and covering of the eyeball. It may occur from irritation by dust, sunlight, the eruption of measles, and contact with persons afflicted with "pinkeye" (epidemic conjunctivitis). The eyelids are red, the eyes are itchy and watery, feeling like sand or dust in the eyes, swallen, and perhaps inclined to

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Trachoma or Granulated Eyelids (Sore Red Eyes) .-This condition, very common in Kentucky and appearing here and there throughout the country, especially among school-children and immigrants, is very contagious and very difficult to cure, many cases going on to a state of partial or total blindness. It is probably conveyed by personal contact, and certainly by such dangerous things as the common towel. The eyes are sore, red, and weak. The lining of the lids looks granular and rough. To the victim it may seem merely "powerful weak eyes that get nigh well at times and then bust out wus' than ever." The edges of the lids look gummy, the upper lids seem to droop, the eyes are sensitive to light, and run water. Treatment must be vigorous, by an experienced oculist, and preferably, for a time at least, in hospital or under the care of a qualified nurse.

Muscæ Volitantes (Spots Before the Eyes).—This common complaint may signify some digestive disturbance or a simple error of refraction. Normal individuals notice floating spots or specks when looking into a microscope or gazing at a bright surface.

Fixed Opacities.—When the spots before the eyes seem fixed and not dancing or moving about, they may be caused by opacities in the vitreous or soft fluid contents of the eyeball. This would require an oculist's attention.

Cataract.—An opacity of the lens of the eye is called a "cataract." The lens being blurred, the pupil, instead of looking black, looks grayish or whitish. The vision is reduced to a greater or less extent, depending upon the degree of opacity in the lens. Often the patient can only distinguish light and darkness. Many persons have unripe cataract without being aware of the fact, when the opacity happens to form at one side of the pupil.

A beginning cataract may be cleared up by proper glasses and medication in a fair share of the cases. have been surprised at the improvement in vision some of our patients have exhibited after months of careful treatment by a good oculist. In a few instances elderly patients, whose vision had become very poor indeed, have regained sufficient vision to read the newspapers quite comfortably, and this in spite of our personal opinion that treatment was useless unless operative in character. One old gentleman had reached the point where it was necessary for him to hand us his bank roll-yes, the whole roll—in order that we might pry off our fee, his own vision being unequal to the task. For many months he persevered in the use of some medicine given him by an oculist, although we, in our well-known manner, ridiculed the idea that anything other than surgical treatment could help vision. To-day the old gentleman no longer entrusts his roll to us; he keeps posted on the news and has many a laugh at us. We have since asked pardon of the oculist who, it appears, enjoys a large following of just such "G. P.'s" (grateful patients).

Fake Cures for Cataract.—The market is full of all sorts of worthless and often dangerous "drops" offered to victims of cataract as wonderful cures. Disastrous results are frequently noted when these fake cures are tried by the deluded sufferer. Unless the patient or his physician is personally acquainted with the oculist or eye specialist, or absolutely certain of his professional standing, it is worse than futile to deal with him. There is one rule which applies in this branch as in all other branches of medicine—an honest physician never advertises, never promises to cure or help a patient he has not

personally examined, and never attempts to treat a patient by correspondence.

Glaucoma.—This is a disease of the eye in which the globe becomes progressively harder and harder, pressing upon the optic nerve, dilating the pupil, and destroying vision. It appears generally after middle age, and more often in women than in men. The patient is apt to have frequent sore eyes and to need frequent changes of glasses. A good many cases go unrecognized, for the obvious reason that the optician or "optometrist" consulted is not qualified, as an oculist or medical eye specialist is, to diagnose disease. We shall discuss this important modern question further.

The Optic Nerve.—The back of the eye is the retina or sensitive film of the camera. The retina may be considered part of the optic nerve. A physician or medical eye specialist can examine the retina directly by means of the retinoscope or ophthalmoscope, an instrument which enables him to reflect a ray of light into the eye while he focuses a lens upon the retina. Now, as a general rule, in order to make such an examination, it is necessary to dilate the pupil temporarily by means of a mydriatic drug. The optician or "optometrist," having no legal right to use drugs, is either unable to make such an examination or, if he can make the examination, unable to diagnose the conditions he may find. And sometimes he goes to the extreme of advertising that "drops are unnecessary and dangerous"-a misrepresentation which is sufficiently refuted by the thousands of instances in which mydriatics are employed with only good results by oculists day after day.

The Reason Why Drops are Necessary.—For an accurate estimation of the visual capacity of an eye it

is necessary, if possible, to eliminate the element of unconscious strain. The "accommodation of vision" is so active in younger adults and children that it is practically impossible to make an accurate measurement of vision unless the accommodation is temporarily placed at rest, and the only means we have for doing this is the use of mydriatics or "drops." Now, the optician or "optometrist" perforce must guess at the amount of latent eye-strain which his approximate method fails to measure, whereas the oculist or medical eye specialist accurately determines the amount of manifest and latent eye-strain and fits lenses accordingly.

Furthermore, the medical man is trained to diagnose what he sees in the retina. It is not at all uncommon for a competent man to discover changes in the retina which tell him quite positively that the patient's defect of vision is only a secondary condition, depending upon, say, a brain tumor, or locomotor ataxia, or Bright's disease, or some other constitutional, perhaps insidious, malady. Finding such a condition, the oculist advises the patient about the proper course to pursue; the optician, on the other hand, not being trained in diagnostic work, probably tells the victim to "return next month and have the glasses changed."

The Competent Optician.—An optician who calls himself an optometrist and essays to practice a branch of medicine without medical training is a dangerous man. An optician skilled in the science of optics and the art of making lenses is quite as useful in the community as is the skilled pharmacist. Like the pharmacist, he stands ready to fill the doctor's prescription. The better opticians in any community are kept busy doing this legitimate skilled work. But, unfortunately, it is the modern

fashion for pretty nearly every jewelry store and department store to have a little "optometry" business on the side, for there is big money in it, and the grand old public will always enjoy being humbugged.

Eye-strain is not the mere existence of a refractive error or faulty shaped eyeball, not mere astigmatism or defective vision. It is the attainment of vision good enough for the ordinary affairs of life by keeping the eyes under a tax too great for (1) the nerves or blood-vessels of the eye; (2) remote organs, such as the stomach, head, neck, back; or (3) the welfare of the eyes themselves.

In eye-strain, in order to obtain a clear image of objects some unusual effort is required to focus the eyes. In good health the patient may be unaware of the expenditure of energy this demands. If the general health is reduced from any cause, or if the patient is of a weak type, then there is apt to be some consciousness of strain, symptoms attributable to the waste of energy attendant upon the focusing effort.

Injuries or affections of the eyes in early life, leaving some unnoticed defect of vision, are a common cause of eye-strain which develops in later life.

Putting the eyes at work soon after a serious illness is liable to produce eye-strain, just as trouble would be liable to follow active muscular work undertaken too soon after a weakening illness.

Intestinal toxemia, or auto-intoxication, is a factor of eye-strain.

Working in a faulty light, in a glare, or in a position which exposes the eyes to direct light may produce eye-strain.

These and other conditions cannot be corrected by the mere fitting of glasses. Indeed, a competent examination may fail to disclose any sufficient defect of vision, though rarely, if ever, does the advertising optometrist fail to sell his customer a pair of glasses.

As a fad, eye-strain has been utilized for the commercial advantage of the optometrist and the prescribing optician. Such statements as "All Headaches Can Be Relieved by Properly Fitted Glasses" and "That Tired Feeling is Caused by Eye-strain—Come in and Have a Free Examination" are illustrative of the charlatan's methods of "cashing in" on the popular delusions.

A few headaches are attributable to eye-strain, but only a few. Even so, if the strain on vision is to be relieved you must have accurately fitted lenses, which means you must have mydriatic drops instilled before the examination if you are under forty.

Astigmatism is an error of refraction due to irregularity in the curvature of the cornea. The image of the object observed is distorted on the retina unless the error is compensated by extraordinary efforts of the focusing muscle or by suitable cylindric lenses.

Near-sightedness, or myopia, means that the eyeball is more elongated than normal, acting as a stronger lens, focusing rays of light in front of the retina, unless compensated by a strong effort on the part of the focusing muscle. A near-sighted person can see objects near the eyes much better than objects at a little distance because light rays coming from objects a few inches from the eyes, being divergent, are more readily focused on the retina. Excessive use of the eyes in early life is considered a factor of near-sightedness. It is more common in cities and among cultured people, the myopic "bookworm" being a classical figure of ultracivilization. The young victim of myopia sees indistinctly all objects at a

distance. He prefers to have his eyes very close to his reading or work. The eyes look somewhat prominent in high degrees of myopia. The pupils are larger than in normal eyes. The patient is inclined to squint. Sometimes there is a tendency toward cross-eyes.

Hyperopia, or Far-sightedness.—In far-sighted eyes, which are too short, the parallel rays from objects are focused behind the retina. The patient may present no symptoms in early life, but with advancing years there is an increasing difficulty in reading without glasses. Grandma threading her needle at arm's length or father throwing back his head to read the paper may be taken as types of hyperopia. A hyperopic eye is never at rest while it enjoys distinct vision, but under unceasing strain.

Local Symptoms of Eye-strain.—Blurring of type after reading for a short time, discomfort or pain or smarting or watering of the eyes after using them for near work. Drowsiness brought on by reading. Twitching of the eyelids. Redness and congestion of the eyelids. Frequent styes. Undue sensitiveness to light. Occasionally headache, but rarely disturbance of the stomach, is noted as a reflex symptom of eye-strain. Some years ago an enthusiastic ophthalmologist spent considerable time at Sonyea, the New York State Colony for Epileptics. trying to establish a theoretic relation between eyestrain and epilepsy. Among the scores of patients most carefully refracted there was just one who showed notable improvement, and this one patient had no seizure for months and months until one day he accidentally broke his glasses, then he had a severe seizure. The medical authorities at the colony concluded that eye-strain had nothing to do with epilepsy.

Whisky, Tobacco, and Drugs.—Alcohol (grain) in any form is well known for its tendency to produce double vision, even in a single debauch. We recall the case of the gentleman who, returning home on his birthday, found a party of friends assembled to celebrate the fortieth anniversary of his arrival on this sphere; as he sat down to dinner and noticed the (eighty!) candles gleaming on the cake, he gasped some incoherent sound and expired. Cause of death, old age; contributing cause, double vision.

Blindness is sometimes produced by alcohol. Wood alcohol, sometimes used in toilet, medicinal, and other preparations as a substitute for grain alcohol, is a notorious cause of blindness. Even when used in varnishes and other preparations in the arts, wood alcohol, absorbed through the skin or by way of the lungs, has caused blindness, and hence should be prohibited as a substitute. Barbers have caused irreparable damage by using wood alcohol as a menstruum for hair tonics and similar articles. A few years ago a great many cases of wood alcohol poisoning, with subsequent blindness, were reported in individuals drinking Jamaica ginger made with wood alcohol as a menstruum.

Tobacco produces partial loss of sight and serious involvement of the optic nerve in many cases, especially among young men.

Quinin, taken in large doses, has caused blindness.

Salicylic acid or the salicylates, such as aspirin, will sometimes cause visual disturbances.

Male fern (Aspidium filix mas), used as a tapeworm remedy, sometimes causes blindness. So does santonin, another popular worm medicine.

Nitrobenzol, used in anilin dyes, as a scent, in the mak-

ing of explosives, and sometimes in making liquid black for shoes, is capable of rapid absorption through the skin, causing blueness, dizziness, collapse, and perhaps dimness of vision.

Carbon bisulphid, used in vulcanizing rubber, is also capable of affecting the vision.

Redness of the Eyes.—A great many people have red, dull, weak, or congested-looking eyes and eyelids. One common cause for this is constipation and auto-intoxication arising therefrom. This is popularly called "biliousness." When the "whites" or sclerotics are really tinged with yellow, that means jaundice. But the dull, heavy, icteric color of congested eyes is in nowise due to "liver trouble." More often it is from overeating, late hours, alcoholic or tobacco excesses, or heavy use of the eyes without the help of needed glasses.

Phlyctenule.—This is a condition in which little white pimples appear on the eyeball, usually just at one side of the iris or colored part, become small ulcers like "cold sores," and cause considerable sensitiveness to light, watering of the eyes, irritation, but quickly clear up when the general system is put in good condition. It generally develops in persons living under bad hygienic surroundings.

Foreign Body in the Eye.—A bit of cotton wrapped about a toothpick and moistened with normal salt solution is the ideal implement for removing foreign bodies from the eye. The upper lid may be turned back by grasping the eyelashes between your thumb and finger while the patient looks downward, drawing the lid out from contact with the eyeball somewhat, then turning it back over the thumb-nail of the left hand. It is well to wash out an eye both before and after the removal of a

foreign body; this may be done by pouring many dropperfuls of warm normal salt solution (tablespoonful of salt to the pint of boiled water) over the opened eye.

If a cinder, bit of emery, or piece of steel is embedded in the eyeball it is better to leave its removal for skilled hands, since it is very easy to damage the cornea and produce serious ulceration. Some of the worst cases we see are those of workmen whose fellows or bosses assume this responsibility instead of sending the men to the physician.

Burn of the Eye by Chemicals.—If any irritating or caustic chemical or acid is accidentally spattered in the eye, the best thing to do is to pour warm water (or normal salt solution if at hand) between the lids to wash out the irritant. An eye burned by heat, as by the curling iron, should be bandaged and left alone until medical attention can be given it. This applies to most eye injuries as well.

Illumination.—The ideal to strive for in illuminating apartments is the diffuse, evenly distributed light of a spot outdoors under a shade tree.

Intense light, such as the arc lamp or a large incandescent gas lamp, is bad for the eyes. A light that flickers, such as the candle, the naked gas burner, and some moving picture screens, is exceedingly tiring and injurious. A glare, as from a large window, or from a highly polished desk or walls or floor is harmful, for the same reason that looking directly at the sun is harmful.

An inverted light, with a diffusing shade, is a very satisfactory light for a room, either gas or electricity. But the choice of all methods of artificial illumination is concealed lights, which are diffused by unpolished ceiling and walls.

On the whole, anything with a shine or polish is best omitted from the furniture of a living room or work-

room. Light, but not necessarily white, walls and ceiling are better than darker tints, as well as more economic. Bright walls and ceilings require a great deal less light for satisfactory illumination, and hence save in the outlay for illumination.

Shades on lamps had better be of ground glass or very light tinted material, never red or green or any heavy color which absorbs and wastes the light.

Electricity is more hygienic than gas or oil illumination, because it neither pollutes nor exhausts the oxygen in the room. In terms of light it is unquestionably cheaper too.

In reading or working it is better if possible to have the light enter and fall upon one's work from over the left shoulder or the right shoulder. School-room benches should always be arranged with a view to avoiding the direct glare of light in the pupils' pupils.

Styes.—A stye is an inflammation of an eyelash follicle or root, generally ending in suppuration or pus formation. Styes are often associated with some systemic derangement or with eye-strain. Hot compresses should be kept on until a yellow spot is seen, then the pus evacuated by pulling out one or more eyelashes or by incision.

Chalazion, or meibomian cyst, is a small enlargement of a meibomian gland in the eyelid, not painful, but disfiguring. These cysts are usually the size of a pea. They can be painlessly and safely removed through a minute incision in the lining of the lid, by the family doctor in his office, without leaving a visible scar or disabling the patient.

"Wild Lashes."—Sometimes a number of eyelashes become inverted and rub against the eyeball, causing irritation, pain, and sometimes ulceration of the cornea.

If but one or two lashes are inverted, they may be repeatedly pulled out with tweezers. If many, they must be killed by electrolysis or corrected by operation.

Entropion and Ectropion.—In cases where the lids are turned in (entropion), from spasmodic closure or from scar formation or inflammatory conditions of the eyes, some form of retentive dressing or operative procedure must be resorted to. In ectropion the lids are turned out, exposing the conjunctival lining to irritation. A well-applied bandage may serve to correct the spasmodic form, but operative methods alone suffice to relieve the inflammatory or cicatricial form (due to scarring).

Ptosis, or Drooping Lid.—One or both upper eyelids may droop from various causes. It may be a congenital condition, an inherent weakness of the elevator muscle of the lid. Paralysis of the third cranial nerve will cause a one-sided ptosis or drooping. For the paralytic form electricity is beneficial. For the congenital form or for cases secondary to chronic inflammations about the eyes an operation is the only cure.

Color-blindness.—This is a hereditary inability to perceive certain of the primary colors—red, green, or blue. Something like 3 per cent. of males and less than 1 per cent. of females are said to be color-blind. A good many people are color-blind and do not know it. Thus, a poor forlorn husband timorously enters the department store to match a sample his wife has given him, and what he thinks a good match would give friend wife a fit! In the examination of candidates for railroad work color-blindness is often demonstrated in men who were never aware of their defect. Davenport's law: "Color-blind males will have no color-blind sons, but their daughters are liable to bear color-blind sons."

CHAPTER VI

THE EAR

The external ear, the auricle, or, as it is commonly called, the ear, is the one dispensable portion of our hearing apparatus. Cutting off the ear does not in the least affect the hearing. The function of the outer ear, as nearly as we can determine after careful study of all sorts of authorities, is to be frost-bitten, boxed, pulled, reddened, punctured for earrings, and operated on for cosmetic effect. Otherwise the outer ear seems to be only an ugly appurtenance.

But once you enter the ear canal, ah! then there are many interesting things to be said about the ear. Before we leave the poor old auricle, however, it may be well to speak of a common condition which sometimes gives rise to unjust accusations. We refer to—

Boxed Ears.—That sounds suggestive of some kind of atrocity, doesn't it? But you know what we mean—cuffed ears. The ears are so ugly that one naturally attacks them when angry. That seems to be the only good reason why the ear is boxed, cuffed, or walloped instead of the chest, which could stand it much better. Now a good free wallop on an ear is likely to raise an eloquent swelling, but in the insane, for some unknown reason, such a swelling, called hematoma, may appear without any injury whatever. This fact has caused many a base or baseless charge to be made against innocent attendants of the insane. To digress a moment, there is

another condition in the same category, namely, scurvy; babies or adults with scurvy will develop black-and-blue marks upon the body with the slightest pressure or touch, even of a mother's loving hands, and this fact not rarely leads to unjust suspicions or actual accusations. We trust our readers will remember these conditions when they hear or read of such incidents.

In order to discuss the ear and hearing it is necessary to cover the subject in a systematic way. So we shall here divide the ear into its component parts:

External Ear	Middle Ear	Internal Ear
Auricle.	Drum membrane.	Vestibule.
Auditory canal.	Tympanum or cavity	Semicircular canals.
	inside drum.	Cochlea.
	Mastoid cells.	Auditory nerve.
	Eustachian tube.	

To these ten parts of the ear we would be inclined to add an eleventh, were it not for fear of confusing the earnest reader. At any rate, in thinking of the ear as an organ subject to the laws of hygiene and susceptible to various painful and serious derangements, one should include the nasal cavity as part of the ear, since affections of the nasal cavity are inseparably connected with affections of the ear.

THE AUDITORY CANAL

The ear canal, or meatus, runs to the drum membrane, in a curve with convexity upward, an inch long. Hairs in the skin lining the canal and the cerumen or ear-wax secreted by glands like sweat-glands serve to keep out dust and foreign bodies. The wax glands are only found in the outer portion of the canal; when masses of ear-wax

are found on or near the drum they have probably been pressed in there by meddlesome toothpicks, hairpins, or other dangerous instruments.

Chewing, whether food or gum, tends to work the earwax out of the canal. Ear-wax never accumulates in a normal ear and requires no attempts at removal. Persons employed in dusty work or those who make too many efforts to keep the ear canals clean of cerumen are most liable to have the canal obstructed with hardened plugs of wax. Symptoms of such accumulation are ringing or noises in the ear, deafness brought on by the entrance of water into the canal, as when bathing, and sometimes a persistent harsh cough without any other symptoms drawing attention to the ears. The wax must never be dug out, but gently syringed out with large quantities of quite warm water containing several teaspoonfuls of soda. A fountain-syringe is best, the nozzle being directed into the ear canal, not inserted in the canal.

Drops are Dangerous.—In spite of old traditions and grandma's assurances, it is a dangerous thing to drop oils or medicines of any kind into the ear canal without medical advice. Oils tend to obstruct the canal on drying, they tend to swell masses of wax and make it harder to remove them, and outside of warmth or counterirritation they can scarcely exert any medicinal influence, even these effects being as well or better attainable by means of glycerin or watery solutions.

Ignorant but well-meaning old pretenders sometimes advise unfortunates to drop chloroform in the ear to relieve an earache. Any one who ventures to follow such advice will dance a lively step for some little while afterward because the pain caused by such an irritant is

indeed exquisite. However, it does make one forget the earache for the nonce!

Sweet oil, castor oil, olive oil, mullein oil, and various crude patent nostrums are all worthless or dangerous and should never be put in the ears.

Foreign Bodies in the Ear.—If an insect gets into the ear canal, let the victim lie down upon the opposite side while you pour warm water into the canal or, preferably, syringe the canal by allowing warm water from a fountain-syringe to run continuously in. The reservoir should be not more than 3 feet above the ear and the nozzle should be directed, but not inserted, in the ear canal. If the insect refuses to drown or to be floated out, then chloroform him tenderly—that is, do it without adding to the victim's torture. We would suggest a teaspoonful of chloroform poured on some cotton in the bottom of a tumbler, the tumbler to be inverted over the ear and held there until the insect gives up the ghost or the patient cries enough.

Children sometimes introduce beans, pebbles, pills, or beads into the ear canal. Do not attempt removal. Call your doctor. A child's ear may be seriously damaged by the most careful manipulations of an unskilled person. Life itself can be destroyed by such efforts. Never attempt to insert an instrument in the ear canal to do anything you cannot see. Blind groping here is about the most dangerous pastime we can imagine. The physician has special means of illuminating the canal, special implements for exploring it, and special skill to use them. If you cannot remove the body by syringing, go no further in your endeavor.

Boil in the Ear Canal.—This is a frequent and exceedingly painful condition. The skin of the canal is so

tightly bound to the underlying bony wall that it does not give as the skin elsewhere does, hence the extraordinary pain. If the boil comes to a head (suppurates) it should be incised and drained. If not, the best treatment is (a) a cathartic, preferably salts (see Appendix); (b) frequent douching of the canal with quite hot normal salt solution every hour or so; (c) between times the application of a 10 per cent. alcoholic solution of ichthyol on a long narrow flake or twisted roll of cotton. Meddlesome picking and scratching with fingers, hairpins, and the like is a common cause of boil in the canal.

Eczema of the Canal.—A person subject to eczema may have it in the ear canal. Itching, ringing in the ears, and perhaps swelling and deafness, with more or less roughness of the lining, are the symptoms.

The Ear-drum.—The drum membrane is not essential to good hearing. Hearing may be excellent when the membrane is perforated or destroyed. There are on the market various patent artificial ear-drums exploited by charlatans and sold at a fancy price. Once in a great while such a contrivance may be worth considering. If so, the way to determine whether or not to buy one is this: Place some cotton loosely in the ear canal; if you hear better with it than you hear without it, an artificial eardrum may improve hearing, provided you can wear one without too much irritation of the canal. Reputable otologists state that these artificial drums seldom help hearing as much as a wisp of cotton in the canal, that they most always irritate, and that any gain of hearing is retained if the contrivance is discarded shortly after it has been inserted.

Holes in the Ear-drum.—Perforations occur when there is an otitis media, or inflammation in the middle ear (inside of the drum), with the formation of pus. Many people have small holes in the ear-drum and still retain good hearing.

The drum may be ruptured by the air-pressure incident to deep diving, heavy explosions, or a box on the ear. A diseased drum is more readily ruptured than a healthy one. Violent coughing, inflation of the eustachian tube, and blows on the head may rupture the drum. The best treatment for such a condition is a strictly "let alone" neutrality.

As a rule, abnormalities of the ear-drum are part and parcel of conditions of the external or middle ear and must be treated accordingly. Retracted ear-drum, for instance, commonly accompanies chronic catarrhal middle-ear disease; and a rigid drum is usually observed in long-standing suppuration or running ear, owing to adhesions which interfere with the vibrations of the stapes, malleus, and incus, the three little bones (hammer, stirrup, and anvil) of the middle ear which conduct sound to the inner ear.

THE MIDDLE RAR

This cavity is called the tympanum. It is about the size of a bean and contains the three little bones above mentioned. It is lined with mucous membrane continuous with that lining the eustachian tube which connects the middle ear with the nasal cavity. Infection of the nasal cavity readily travels via the eustachian tube into the middle ear—hence the common occurrence of earache and gathering in the head as a complication or sequela of coryza or "cold" in the head. The eustachian tube normally serves to ventilate the middle ear, to maintain an equal air pressure outside and inside the ear-drum, to

carry away the mucus secreted by the lining of the middle ear. The importance of the close relationship between the nose and the ear is again presented to the reader's attention, and the chapters on Catching Cold and Catarrh cited for study.

One-third of all adults are more or less deaf. Seven hundred in each million inhabitants, according to the census reports, are dumb as a result of deafness. Some 10 per cent. of school children are found to have defective hearing. Practically all of these impediments are traceable to some original infectious condition of the nose and throat or to chronic nasal catarrh, adenoids, and enlarged tonsils. Scarlet fever still contributes generously to the deafness of the community. But by all means the most universal factor or, rather, the factor most nearly universal is the "catching cold" which our good friends, the skeptics, continue to pass around gratuitously while doing their best to avoid fresh air in its natural cool, moving state.

The reader who has scanned this book thus far and perchance marveled at our repeated allusions to "colds" and their purely contagious character will forgive us for harping back to the same subject in every chapter. Our excuse is a good one—there is scarcely an ill flesh is heir to but that it is in some way associated with the delusion of "catching cold" from atmospheric or climatic conditions, and there are innumerable diseases, mild, painful or serious, primarily attributable to the infection which gains entrance into the body under the guise of a "simple cold." If we harp on the one string more than would seem reasonable, it is because there is no other note in all the concert of human ills, no other theme so sustained in the whole gamut of pathology as it concerns the health

of the individual. "Taking cold" is no joke; it is a very vicious delusion.

Earache.—The familiar "earache" is an acute inflammation of the middle ear, acute catarrhal otitis media, secondary always to coryza, be it from measles, scarlet fever, nasal operation, or direct infection from loving friends. To say that a kiss on the lips, or a merely animated conversation with its usual splashing accompaniment, can produce a pain in the ear may seem a round-about sort of reasoning, but it is nevertheless true.

The symptoms are pain, sense of fulness in the ear, impairment of hearing, perhaps fever, and, in young children, delirium. A beating or puffing sound in the ear may precede the pain.

The treatment is frequent and prolonged warm douching of the ear canal as previously described. This should be repeated every half-hour. Meanwhile keep the canal filled with a soft twist of cotton moistened in hot glycerin, the wisp being gently twisted into the canal. Never drop any kind of oil or other substance in the ear canal without medical advice. The patient should have an active saline cathartic, be kept in bed on a light diet, and perhaps be given a hot mustard foot-bath or a pack—in short, treated as for an acute coryza. Such spectacular expedients as blowing tobacco smoke in the ear, putting on leeches, and steaming the ear are mentioned only to be condemned as useless or injurious.

Chronic Catarrhal Deafness.—Chronic catarrh of the middle ear follows repeated attacks of acute middle-ear catarrh or develops as a result of chronic nasal catarrh. Nasal catarrh is discussed in another part of this book. The symptoms of middle-ear catarrh are deafness, tinni-

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tus (noises of various kinds in the ears), sometimes vertigo or dizziness, and occasionally mental depression due to the annoying noises or the embarrassment of deafness. A peculiar symptom in many cases is the ability to hear better in a noise, as in listening to a conversation in a railway car or a rumbling factory. Persons afflicted with deafness due to auditory nerve involvement, on the other hand, are scarcely able to hear at all in a noise, even though but one ear is involved.

Treatment for catarrhal deafness is treatment for the condition in the nose and eustachian tube. General measures to improve the health are necessary, as well as local treatment. Inflation of the eustachian tube at stated intervals, and perhaps treatment directed to the middle ear through the eustachian catheter, will give considerable relief.

Make a Face and Hear Better.—Fernet, a French otologist, recently contributed a paper to the Bulletin de l'Academie de Medecine in which he asserted that facial grimacing will prevent the encroachment of deafness in many people. We are all familiar with the unconscious grimacing made by the deaf person in an endeavor to catch words in a noise. There is probably as good reason for this as there is in the contraction of muscles about the eyes when we look sharply at any object. When you wiggle your ears, supposing you have not lost that ancestral habit, you necessarily exercise the muscles of the eustachian tubes at the same time. Fernet suggests that the patient contract in order the muscles of the lips, the nostrils, and the eyes several times in succession. Next he should wiggle the ears, or try hard to do so. Next he should shake his scalp, as indeed all of us should, devoting particular effort to the

endeavor to lift the ears and to draw them backward. Such exercise at least tends to give one a mobile, expressive countenance and to take up sag and slack and improve the complexion—lady readers please note. Fernet informs us that it will improve the hearing and stop the progress of deafness in many cases. Any one taking up this method should make a careful study of anatomy first, in order to focus attention upon the muscles to be exercised.

Fake "Cures" for Deafness.—Here we must refer to the various crooks who make a business of advertising "cures" for deafness. It is scarcely necessary to say that these parasites, who call themselves ear specialists, are out to "do" the patient, not to do him good. Their electric batteries, massage, and vibratory outfits are invariably cheap, worthless contraptions sold at an outrageous price. But, as P. T. B. is accused of having said, there is one born every minute!

"Gathering," or Abscess in the Ear.—In scarlet fever and as a result of coryza there may be an earache that fails to subside under treatment, but goes on to the point of pus formation and perforation of the ear-drum, which constitutes a "gathering in the ear."

The symptoms are like those of plain earache, but generally there is more feverishness or perhaps chilliness, though the pain is not worse. When the drum bursts and the ear runs a few drops the pain ceases. The discharge may continue for several days.

The treatment is like that of earache, but if the doctor examines the ear and finds the drum bulging he can puncture the drum and give exit to the pus, saving the drum from worse damage and hastening recovery by days.

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Chronic Running Ear.—This is a chronic suppuration of the middle ear, discharging through an opening in the drum. Some cases are tubercular, some syphilitic, but most are due to caries or death of bone in the middle ear or the mastoid bone back of it. Treatment is a question for the physician to determine according to the conditions present. The principal reason for following up a course of treatment faithfully is that chronic running ear is a daily menace to the individual's life, to say nothing of the effect of such a condition upon general health. Let us state, for the benefit of any misguided person who may read these lines, that to stop a running from the ear by intelligent treatment is always beneficial to health, and to allow a running ear to go untreated often brings death.

Mastoiditis is the reason why the chronic running ear should never be neglected. Children, youths, and aged persons—any of them may develop acute mastoiditis at any time as a complication of the middle-ear disease, and be forced to undergo a dangerous operation.

The mastoid process is that hard bone you can feel right behind the ear. It contains hollow air cells which communicate directly with the cavity of the middle ear. Why these cells are there and why they communicate we don't know. If the infection or pus works its way into the mastoid cells or spaces a serious condition follows. This may happen without visible swelling or soreness behind the ear, even without pain in a chronic running ear, yet the patient is in imminent danger of involvement of the brain itself. Often the only suggestive symptom of an involvement of the mastoid in a suppurative middle-ear infection is the markedly large amount of pus discharged from the ear. When a running

ear exhibits an increase in the quantity of discharge a physician should be consulted at once, no matter how well the patient seems. Again, the only symptom of an involvement of the mastoid cells may be an inexplicable rise of temperature. Many a case of this kind is mistaken for "typhoid" or "la grippe"—whatever that is—if the doctor is not aware that the patient is subject to middle-ear disease. The brain cavity is separated from the mastoid cells by an exceedingly thin plate of bone which is easily broken down by suppuration, and when this happens the chances for life are very bad indeed.

The treatment for mastoiditis is operation in the vast majority of cases. But there are certain cases which respond promptly to non-surgical treatment—cases which the physician or ear specialist must select. The consequences of neglect or refusal of operation in mastoiditis are brain abscess, general blood-poisoning, or meningitis.

INTERNAL EAR

We now come to the third ear—you see, most people have six ears instead of two. Deafness from involvement of the internal ear, the nervous part of the hearing apparatus, is characterized by these pleasant symptoms (we call them pleasant because we have them): (1) You can hear better in a quiet place; (2) noise, such as the eternal chin music of a bevy of gracious ladies in a closed room, or the loud conversation of talkative people, or the roar and rumble of a busy street, exasperates and exhausts you; (3) your hearing is absolutely lost in the affected ear; and (4) the tuning-fork is heard better through the air than through the bones. Causes of nerve deafness are: (1) injury to the head—as, for instance, falling out of a neighbor's apple tree while engaged in the

sociable act of robbing a bird's nest; (2) bleeding into the internal ear from diseased blood-vessels; (3) inflammation; (4) concussions of the nerve, as in boiler shops, on battlefields, etc.; (5) meningitis leaving a damaged nerve; (6) syphilis; (7) sometimes scarlet fever or measles; and (7) aneurysms of the cerebral arteries or other tumors in the brain.

In some cases of internal ear disease which involve the semicircular canals there is a tendency to staggering gait or some disturbance of equilibrium. The circulation of the lymph through these canals has an intimate connection with equilibrium. It is a well-known fact that very cold or very warm water is liable to cause dizziness or sudden faintness when syringed into the ear canal, especially if the drum is perforated. Indeed, it is believed that a good many cases of drowning of expert swimmers may be explained by the vertigo or syncope they suffer when water enters the ear canal. Any one with a perforated drum ought to wear cotton in the ear canal when going bathing.

We stated earlier in this chapter that a harsh, brassy, obstinate cough sometimes proves to be due to some irritation of the wall of the external ear canal. There is a reflex nerve connection—the so-called Arnold's branch of the pneumogastric nerve—to explain this. But in lesions of the internal ear nausea and vomiting, as well as vertigo, are often symptomatic. One theory of seasickness is that the peculiar rocking of the boat disturbs the normal circulation of lymph through the semicircular canals of the internal ear and this brings on the delightful symptoms of mal de mer. Many a patient has suffered from seasickness right in the doctor's office when the ear canal with a perforated drum was syringed.

Deaf-mutism.—A child born deaf will usually be a mute, but acquired deafness, such as catarrhal deafness, is also capable of causing mutism. A good many cases of mutism are caused by deafness following scarlet fever in babies and by meningitis.

Tests of Hearing.—A normal ear should hear a watch tick 40 inches away.

A better practical hearing test is the ordinary conversational voice, the operator standing behind the patient and finding at what distance he can hear ordinary conversation. One who scarcely hears the watch tick may hear conversation perfectly at 50 feet.

A tuning-fork set vibrating and held on the bone behind the ear and then held before the ear is normally heard longer in the air. If the conducting portion of the ear the middle ear—is the part affected, the fork will be heard better on the bone.

Inflating the Eustachian Tube.—The eustachian tube is apt to become closed or obstructed with mucus when one has an acute coryza or middle-ear disease. It may be inflated by the act of swallowing—this is nature's way of keeping the tube open—or by an air-bulb in the physician's hands, or in some cases it may be safe for the patient to inflate his own tube by pinching the nostrils and blowing into them until the pressure is felt in the ears. This latter practice should be only occasionally indulged in—once a day—because if done too frequently it will congest the ear and aggravate the trouble.

We once saw an elderly woman who had been very deaf for some twelve or more years instantly restored to normal hearing by the simple process of inflating the eustachian tubes. The stopped up or closed tube is the cause of the difficulty of hearing when one has coryza. Avoid the Nasal Douche.—In the interest of the ears and hearing we believe it should be made unlawful to sell or give away the glass nasal douche contrivance which is distributed with samples of alleged "catarrh" remedies. This contrivance is based upon a wrong conception. The nasal passages may be cleansed by a spray or by a douche from a fountain-syringe, but when the glass douche is employed there is always danger of drawing fluid or infective material up into the eustachian tubes and causing serious results. If the nasal passages require cleansing we would suggest the use of a good atomizer, such as the DeVilbiss No. 18, and a solution, such as the National Formulary alkaline antiseptic solution, 1 part in 6 or 8 of warm water.

Do Not Wear Cotton in Ears.—Another common mistake is that of wearing cotton in the ears, with some vague or foolish notion of avoiding "taking cold." All competent otologists agree that the external ear canal should not be stuffed with cotton, but allowed to have natural ventilation. When cotton is put in or advised by the doctor for any reason, it is for temporary purpose only. Never should a person with a running ear wear cotton to obstruct the natural drainage.

Cosmetic Conditions.—The auricle or external ear is literally seized upon by the criminologists as a first-rate place to find "stigmata of degeneration." Thus, wide, flopping, and outstanding ears are one of the marks of a criminal character, we are told, and very often the finest types of men will have just such "criminal ears." It is probably true that mental and moral degeneracy are more common among physical degenerates, but we should hate to believe that all our physically degenerate friends are criminally inclined. In fact, we think it is a

very exceptional person that will exhibit no stigmata of degeneration if carefully searched.

People who have very prominent or stick-out ears may have them corrected by a fairly simple operation. For such an operation the general surgeon should be consulted, and not one of the advertising "face specialists," who are usually extortionists.

CHAPTER VII

HEAT AND VENTILATION

CATTLE and most other animals in a state of captivity are very susceptible to tuberculosis. But if we may accept the word of observers who have had the opportunity to investigate, the wild animals do not have tuberculosis. If there is any great distinction between wild animal life and animal life in captivity it is the very obvious one of housing.

The house is the abode of disease.

The air outdoors is germ free everywhere.

Dust may carry bacteria of disease, but what germs manage to travel about on dust aëroplanes are either chilled to death or sunstruck when they land, for you must know that pathogenic germs generally do not grow, and most of them do not survive any length of time at temperatures much below body temperature or in direct light.

The house supplies the conditions favorable for germ life—darkness, warmth. The occupants of the house supply the other essential conditions—food, moisture.

Pneumonia becomes less prevalent as you go toward the poles. In the extreme north it is unknown, explorers tell us. Pneumonia, like tuberculosis, is a house disease. As the authorities on the Panama Canal work and at the South African Rand found, pneumonia is a tropical disease which prevails in direct ratio with the crowding indoors. It is a tropical disease wherever encountered,

but particularly, we think, in the average American home.

The much too common "cold," meaning the different specific infections of the nose, throat, and chest, is now generally looked upon as a contagious disease, and, we believe, a house or indoor disease, an infection which finds its shining victims among those most housed up.

If we are to sum up in one sentence the cause of all disease we should perpetrate something like this: Mankind's maladies are due to three great sins—too much cheating, too much heating, and too much eating. If there were no cheating there would be no poverty; if there were no means of heating dwellings and other apartments there would be no respiratory infections; if there were no overeating—well then what would the doctors do for a living?

Keeping Good and Warm.—It is easier for a person to change his religion than it is for him to change his views upon atmosphere and weather in relation to health. We are creatures of soft clay up to about the age of thirtyfive. After that we are creatures adamant. In early life we are taught to look upon cold weather and dampness and drafts and exposure as dangerous conditions. Some responsible guardian spent many anxious months protecting us from such things when we first arrived upon this deadly sphere. All through childhood we were coddled and overdressed and tucked in and kept good and warm. In youth we were warned, beseeched, and threatened when we left off our winter-weights too early, or went out without anything on our shoulders, or forgot our rubbers. It was the most natural thing in the world for us to absorb the great delusion and harbor it all our lifelong.

Who fosters this idea that cold and drafts and dampness and sudden changes of weather are harmful? Who keeps alive the "cold" phobia? Who insists that modern medical science is all wrong and old-fogyism all right?

First and foremost, our grandmothers, figurative and literal, both sexes. Some of us are grandmothers at twenty-five; others never attain the distinction at all. We had a letter from a grandmother of the latter type the other day. She said that when she first read some of our "goings on" about "colds" she thought we were quite irresponsible. But she kept reading, and presently she began to see some semblance of common sense in the arguments we persistently offered, until finally she took a chance and started sleeping on the porch. Now she is a "crank" on the subject, because she has never felt so well and strong and she has no more "delusions"—meaning "colds."

Christian science, perhaps, or just coincidence? If it was an occasional thing we would think so too. But this grandmother, while exceptional in her mental malleability, is no exception to the general rule that the porch bedroom makes for better general health and increases one's resistance against the respiratory diseases. And the rule is not without exceptions. We occasionally hear from somebody who tries porch sleeping and feels worse or "takes cold" all the more easily. These exceptions are what we call coincidences. In a few cases we have had the satisfaction of studying the anomaly personally and discovering the hidden infection, the focus or depot of poison, in the individual's system, that caused the frequent alleged "colds." Eradication of this focus—an infected tonsil in one instance; pus-pockets in the

gums in another; frontal sinusitis in another—brought relief from the "frequent colds."

Keeping Cool and Well is Better.—In summer time, at any rate, it is universally considered healthful to keep cool. A temperature of 60° or 65° F. is considered ideal in summer. Why not in winter? Why do we fall into the soft habit of heating our homes and other buildings to 70° F. or higher? It is just habit. We go about with very much the same clothing in winter time indoors or we wear heavier clothing, and yet we don't feel comfortable unless the thermometer records 70° F. or higher.

The Value of a Thermostat.—Depending on one's physical strength, diet, clothing, exercise, and general health-factors which vary considerably from day to day and hour to hour—one feels warm or cold or comfortable. It is the habit to turn on or turn off heat according to individual sensations rather than the actual degree of warmth in the air. When mother feels comfortable father may feel too warm and grandma may be chilly. Or when the children are perspiring grandfather may be grumbling about the cold. The young people are warm because their vitality is strong, their body heat ample, whereas the old people have smouldering vital fire, insufficient body heat. But in neither case can the individual sensations be rightly attributed to a few degrees variation in the warmth of the air in the apartment, nor can it be put to rights by hectic efforts to regulate the temperature of the room. Clothing had better be changed to suit the requirements of the individual.

And nothing is to be gained in quarreling over the regulation of room temperature. The ideal arrangement is a good thermostat. A thermostat takes this subject of endless debate out of biased hands and makes

it an automatic affair. A thermostat is a distinct advantage, from the hygienic standpoint as well as the comfort of mind and body it affords, because it tends to make an equable climate indoors a reality.

We believe that 65° F. is as high as the temperature of living-rooms, workrooms, school-rooms, theaters, churches, or other public buildings should be permitted to go in the winter time. From 65° to 68° F., preferably 65° F., is the ideal household temperature.

It is only a few years since operating-rooms were kept at a tremendously high temperature, so high that surgeons and nurses perspired profusely and the miserable victim on the table actually suffered for fresh air. The reason was a very foolish one—to prevent pneumonia as a complication! Since intelligent views have changed this vicious practice pneumonia after operations has become much more rare and the patient has suffered less from shock.

There are still physicians who vainly try to keep certain invalids good and warm by excessive room temperature, but the modern practitioner is convinced from theory and experience that the sick room, of all places, must not be too warm.

Heat and Ventilation are Largely Antithetic.—What is "pure air"? In past years our school physiology teacher was accustomed to teaching that "bad air" was air containing too much carbon dioxid and perhaps some vague organic poison or excrementitious substance given off from human lungs. This was the idea of sanitarians until the past year or two. But recent investigations have established to the satisfaction of most authorities that stale or bad or impure air in a room produces its well-known effects upon the occupant, not because of

the carbon dioxid or organic poison, but because of its elevated temperature, freedom from drafts, and its excessive moisture. The mental and physical depression, yawning, drowsiness, perhaps nausea produced by "bad air" are readily produced by these factors even when the carbon dioxid is not present in excessive amount, and laborers in great sewers, where the proportion of carbon dioxid often rises far above the amount found in the vilest room atmosphere, suffer no ill effects.

Both experimentally and in actual practice it is to be noted that the depressing effect of foul air is prevented or removed by fans, even though no outside air be admitted, and mere warmth in the air of an assembly room will tell upon the occupants much more quickly than will actual foulness of the air.

The question of fresh air is thus inherently bound up with the question of heating. If your apartments are excessively heated the air cannot be "fresh"; if they are moderately heated, it is easy to keep the air fresh. In fact, all you have to do is to have a good draft through the apartments.

Now our ancient, house-bred sanitarians used to lay down this impossible rule: Secure good ventilation, but avoid drafts. That "avoid drafts" is a sort of a night-mare that still haunts the poll-parrot authors who write books by consulting books. Even in the very latest medical works—a certain made-to-order type of them—the dictum creeps in, probably without the author's personal knowledge, for a good many of the hard-working medical authors nowadays write by proxy—their office assistants and secretaries write the books while the masters are out gathering in the harvest. If we cared to be downright mean and low and unethical we could cite some very

amusing, some startlingly clashing quotations from one or two famous medical authors along this line. But this is not the place—we have done that hypercritical thing in the proper place.

Good Ventilation Means a Good Draft.-Ventilation. if we understand it, means change of air in a given space. In order to let out foul air you have got to admit some more air to take its place, because old mother Nature is obdurate and set in her ways-she abhors a vacuum. And if you do admit any air from the outside, be it warm or cold, you thereby have a draft. Hence you can't ventilate without having a draft of air entering your room at some point or other. Perhaps the old masters meant when they cautioned the timid reader to avoid drafts that he should merely avoid the direct draft and let the indirect draft do its worst. But what is an indirect draft? One that has jumped a window-board or dodged round a screen or entered through a patent ventilator flue. We fancy the draft our forefathers avoided in practice was the one they felt. That is the draft our mothers and grandmothers still struggle to ward off, and drafts are felt in direct ratio with the fear one has for them.

This uncertainty as to what constitutes a draft worthy of being shunned explains, we think, the vast incongruity and diversity of theory in the various systems of ventilation advocated by sanitarians and architects today. True, here and there some earnest soul endeavors to fix a definite test for the admissability of a draft, but, unfortunately, his fraternal colleagues cannot agree with him, so the merry dispute goes on.

Speaking from our personal, and we admit rather unconventional, standpoint, we think any draft appreciable to the senses is a salutary thing, and a drafty hall or theater or church is our idea of a safe place to sit. Not that we wish to be perverse, but we honestly feel that the conscious draft is to be welcomed, just as a breeze or wind outdoors is welcomed.

Methods of Heating.—Among the methods of heating residences and other small buildings the hot-air furnace, notwithstanding the many objections to excessive dryness of the air, is perhaps the most nearly hygienic. A home warmed by a continuous supply of air from the outside air is bound to be fairly well ventilated. If ventilation is faulty, the incoming current of air will be insufficient to maintain reasonable warmth. A hot-air inlet in a room assures more or less movement of the air in the room—creates a draft.

Our individual choice would be the hot-air furnace for a house not too large. For a very large house or building a hot-air furnace may not be satisfactory.

Steam heat or hot-water heat comes second in the preferred list, for this reason: In order to obtain sufficient warmth from a steam or hot-water radiator you must reduce ventilation in the room to the minimum. A radiator warms the air particles lying in contact with it, these air particles warm those lying in contact with them, and so on until the air of the whole room is more or less warmed. Obviously, if you have drafts or free ventilation in the room the radiator is going to have a hard job keeping you comfortable.

It is a curious fact that office buildings and homes heated by steam or hot water will exhibit a temperature of 75° F. or more when the occupants feel comfortable, whereas the hot-air heated apartment feels comfortable when the temperature is 10 degrees lower. People work-

ing in steam-heated buildings and living in hot-air-heated homes frequently comment about this.

The sole advantage of steam radiation over the hotair furnace is an economic one in large buildings. For the average home the hot-air furnace is cheaper and hygienically preferable. A steam radiator or a hot-water radiator in a room is ugly. It is analogous to, but far less attractive than, the old-fashioned stove. Hygienically the stove was better, because it stood out toward the middle of the room and heated the air more equably on all sides.

The Open Fire:—A fireplace is cheerful and a good ventilator, but gives unequable heat and wastes fuel. As an addition to supplement furnace heating a fireplace is to be recommended in the living-room. Good cheer makes for good health, and good ventilation tends to prevent family jars.

The Stove.—For a single room a stove standing in the middle of the room is a fairly efficient means of heating, and it favors ventilation by drawing in air and sending it up the chimney with the products of combustion. It is believed that when a stove becomes red hot carbon monoxid—the poisonous coal-gas, not carbon dioxid (carbonic acid gas)—may pass through the iron into the air of the room.

Coal-gas.—Carbon monoxid is formed by the incomplete combustion of coal- or illuminating gas; it forms from 7 to 10 per cent. of illuminating gas, from 25 to 30 per cent. of water gas. It burns with a blue flame, such as is seen on the surface of a coal fire. It is colorless, odorless, and highly poisonous when breathed. The gas is absorbed into the blood, where it displaces oxygen in the molecule of the red blood-corpuscles, thus preventing the oxygenation of the tissues. Symptoms of

coal-gas poisoning are dizziness, throbbing of the temples, ringing in the ears, lassitude, and in severe cases convulsions and loss of consciousness. Inhaled in small quantities it sometimes causes delusions or other mental symptoms. If inhaled by sleeping persons the sleep only becomes deeper and drifts into coma, which may end in death. Tramps sleeping near coke ovens on cold winter nights are often poisoned by carbon monoxid gas. Perhaps the first noticeable effect of inhalation of the gas in a house is headache and a queer feeling of numbness or loss of power in the legs. The treatment, of course, is a matter for the doctor to determine.

Leaky gas fixtures are a common cause of mild chronic carbon monoxid poisoning, the symptoms being anemia, depression, and general weakness and ill health. A defective stove burning coal may also permit the poisonous gas to escape into the room. Illuminating gas may get into the air of a house from a broken street main, the gas penetrating the foundations through the soil. In such a case the soil robs the gas of its odor, but not of the poisonous effect, thus adding to the danger. This accident is more likely to happen in the winter time or along streets paved with asphalt, because then the gas cannot escape into the open air so readily. Another occasional source of carbon monoxid poisoning is the hot-water gas-heater, which, becoming filled with soot which may become incandescent, makes an ideal apparatus for the manufacture of the gas. A case is reported in which three persons were overcome by carbon monoxid gas from such a source in a kitchen in Washington, with fatal results.

Gas-heaters.—The open gas-heater without a flue to carry off the products of combusion is very objectionable from the hygienic standpoint. It fills the room

with carbon dioxid and other products of combustion which have an effect on the occupants comparable to that of rebreathing air in a room where a crowd of people sleep. Rubber or other flexible tubes connecting such stoves with the gas supply are causes of many deplorable accidents, to say nothing of the ill health so commonly produced by leakages too slight to alarm the household.

Oil-heaters.—The oil-stove so much used as a portable heating device is open to the same objections as the gas-stove without a chimney to carry off the products of combustion. An oil-stove burning in a bedroom uses up as much air as twenty people crowded in the room—the effect may be left to the imagination. We must bear in mind that the minor question of odor has nothing to do with the sanitary question.

Electric Heaters.—The electric stove is clean, odorless, and very convenient, but expensive, and by no means so sanitary as a coal-stove, a gas-stove properly connected with metal connections and supplied with a flue, or a hot-air furnace. It is just as hygienic as steam or hot-water heating.

Sunlight and Warmth.—Our houses do not admit enough sunshine. Even the few windows are generally shaded. Every house roof should have a skylight to admit natural warmth.

What Professor Rosenau Says.—His years of experience as an officer in the United States Public Health Service and his eminent position as Professor of Hygiene in Harvard Medical School gives weight to Dr. Milton J. Rosenau's opinions. Although he doesn't always agree with our own views, we do try hard to agree with his. Anyway, we respect his views on all these matters of hygiene, and even though they may differ from our own,

we feel bound to quote them. In his work on "Preventive Medicine and Hygiene" Professor Rosenau writes:

"The tendency in winter is to wear too much clothing indoors in order to compensate for our imperfect systems of heating. This results in coddling—that is, loss of vasomotor tone of our peripheral capillary circulation from the constant bathing of the skin in a close moist layer of air. This, in turn, results in susceptibility to drafts and liability to colds. It is quite unnecessary to wear heavy winter clothing in rooms and offices properly heated and ventilated."

We regret that the distinguished author does not specify what should be worn indoors in the winter time, and, of course, we cordially deplore his very careless use of the word "colds" in a scientific book. But it is impolite to interrupt. He continues:

"Most of our American houses are overheated with abnormally dry air in the winter time. This is a mischievous combination. It causes excessive evaporation from the skin and mucous membranes, which gives rise to a feeling of chilliness. It also causes dryness of the skin and mucous membranes, irritation of the throat, and thus predisposes to colds (sic) and respiratory infections. Warm dry air does not give the same sense of warmth and comfort afforded by a cooler moist air."

Here we must interrupt to quote from another page of Dr. Rosenau's excellent text-book. Writing about "Common Colds" he says:

"The popular fallacy that colds are due to exposure to drafts, sudden changes of temperature, and chilling of the body clings persistently in both the professional and lay mind. These are predisposing causes and will not produce a cold without the presence of the specific cause. The bacteria usually found associated with these catar-

rhal infections are staphylococci, streptococci, pneumococci, influenza bacillus, the Bacillus catarrhalis, and other bacteria. . . . Colds are contracted from other persons having colds, just as diphtheria is contracted from diphtheria. Arctic explorers exposed to all the conditions ordinarily supposed to produce colds do not suffer from these ailments until they return to civilization and become reinfected by their fellow-men. A campaign to prevent the spread of the common cold would have much collateral good in aiding the suppression of tuberculosis and causing a diminution of pneumonia and other infections."

Since, as Dr. Rosenau explains, predisposing causes do not produce these respiratory infections without the presence of the specific cause—germs—we need offer no apology for the gratuitous *sic* we contributed to his remarks above. And we think any careful and discriminating reader will agree that the *sic* was justified from the clear context. But back to our ventilation.

Warm dry air does not feel so comfortable as cooler moist air. There you have the cue or the key to successful heating. Keep the air fairly cool, not above 65° F., and it will feel comfortable. Also it will be purer air, in the sense that it will not be depressing. Also it will be less irritating to the respiratory mucous membrane, because it will not be so dry. Also it will obviate the need of any patent humidifiers attached to your furnace or radiators. These contraptions are all more or less futile anyway. They cannot possibly add sufficient moisture to correct the condition produced by heat.

To sum up the whole subject of heating and ventilation in a sentence, we beg the reader to remember this: It is more expensive and dangerous to keep good and warm than it is to keep cool and well.

CHAPTER VIII

THE AIR WE BREATHE AND HOW WE DON'T

A HEALTHY adult takes about eighteen inspirations per minute when awake and about fifteen when asleep. A child at birth breathes forty times a minute. A child at five years breathes twenty-five times a minute.

Snoring and stertorous or noisy breathing is due to relaxation of the soft palate and flapping of the tip of the palate between the air entering through the nose and the current entering through the open mouth. In certain cases of unconsciousness in which the breathing is noisy and labored, the unpleasant sound can be prevented by turning the patient well over on the side so that the face is directed somewhat downward. This is advisable in comatose conditions generally, because it makes the breathing freer and prevents congestion of the base of the lungs.

Mouth-breathing.—In children mouth-breathing is frequently caused by adenoids obstructing the pharynx or by simple chronic rhinitis ("nasal catarrh"). A certain number of mouth-breathers acquire the habit through imitation, from associating with other children who are mouth-breathers. If due to some obstruction of the nose or throat, the condition must be medically or surgically remedied. If due to habit, it is wrong to scold or abuse the child. A system of rewards and gentle reminders will always prove more effective. There are various appliances to be worn at night, but we cannot

recommend them as bearing out the claims made for them. Mouth-breathing, besides influencing the development and looks of the child, is injurious to the health. It favors the development of the various respiratory infections.

Capacity of the Lungs.—With each inspiration there is about 20 cubic inches of air taken into the lungs. This amount varies with the height of the individual and also with the degree of activity. In perfect repose not more than 10 cubic inches of air are inspired, and under excitement as much as 70 cubic inches may be inspired in each act of breathing. Thus, our popular movie heroes and heroines must use up a lot of air in their emotional scenes.

This 20 cubic inches of air is the amount the average person takes into the chest in ordinary breathing. It is called "tidal air." There is always in the lungs about 100 cubic inches of air which cannot be expelled by forced expiration—the "residual air." And then there is another 100 cubic inches of air remaining after an ordinary expiration, called "reserve air," and this can be expelled by an effort. Over and beyond all this it is possible, by forced inspiration, to crowd in still another 110 cubic inches of air, or in singers considerably more.

The extreme breathing capacity in the average man 68 inches tall is about 230 cubic inches of air; that is, the volume of air that he can expel from the lungs after the most forcible inspiration. But a man's chest capacity is by no means commensurate with the number of inches he can expand his chest, since diaphragm and abdominal muscle action is much more important. Nor is a man's strength or health or resistance against consumption in

any wise indicated by the number of inches he can expand his chest. Many a patient with incipent pulmonary tuberculosis shows a chest expansion of 4 or more inches, which is above the average. In fact, the tape-line is no longer an instrument of precision in diagnosis.

Neither does a man's weight appreciably affect his breathing capacity. The stature alone bears a definite relation with the capacity of the lungs.

Composition of Air.—Pure air contains about 79 parts of nitrogen, and a trifle less than 21 parts of oxygen. About $\frac{1}{20}$ of 1 part is carbon dioxid (carbonic acid gas), that is, $\frac{1}{2000}$ of the air. When expired from the lungs the air is found to have lost about 5 parts of its oxygen, and it contains about 4 parts of carbon dioxid.

Atmospheric Pressure.—At sea-level the pressure of the atmosphere is 15 pounds to the square inch, or a pressure sufficient to maintain a column of mercury 30 inches. The air pressure diminishes with every foot of elevation above sea-level, being 29 inches (barometer) at an elevation of 910 feet, 28 inches at 1850 feet, and less than 25 inches at one mile.

The effects of high altitude are equivalent to breathing rarefied air. The breathing is deeper and the pulse-rate faster. The number of red blood-corpuscles is augmented. The effects of a sudden change to high altitude, as in ascending a mountain by rail, are rapid breathing, accelerated circulation, noises in the head, dizziness, impairment of vision, dulness of the intellect, and a strong desire to sleep. Aviators are familiar with these symptoms. Very sudden change in a rarefied atmosphere, as in a balloon ascension, is apt to cause fainting, difficult breathing, and nausea. "Mountain sickness" is the name given to these unpleasant symptoms. The highest

dwelling place continually occupied is said to be the El Mirti Observatory in the Andes, 5880 meters.

Effects of Increased Pressure.—Divers working at a depth of about 100 feet are exposed to a pressure of 60 pounds per square inch—four times as great as the pressure at sea-level. If the descent is gradual, and the ascent is also gradual, by easy stages, the blood adjusts itself to the change with little trouble. If the descent or ascent is too rapid, serious symptoms may develop because the blood hasn't time to absorb or get rid of the gases. "The bends" or caisson disease is usually caused by too rapid decompression.

When is a Draft?—Fresh air standing still is universally deemed good for the health, but fresh air in a perceptibly moving current is still mistrusted. Of course, some movement of the air is essential for ventilation. But when does moving air become a draft? Air moving at the rate of 1.5 feet a second (1 mile an hour) is imperceptible; at 2.5 feet a second (1.7 mile an hour) it is barely perceptible; at 3 feet a second (2 miles an hour) it is readily perceptible; at 3.5 feet a second (2.3 miles an hour) it is a draft. Most of us old folks walk at the rate of 2.3 miles an hour as a rule, so you can imagine the terrible velocity of the well-known indoor hurricane.

A draft blowing upon the skin of a normal individual stimulates reflex nervous influences which accelerate the local circulation. The effect will be either beneficial or imperceptible. The same draft blowing upon the skin of a very weak, aged, hard-drinking, or coddled person may fail to institute the normal reflex vasomotor response, and the result will be local or general discomfort. So, when we speak of drafts as salutary, we mean they are salutary for normal individuals. Sick people

should leave all such questions to the decision of their personal medical advisers.

What Leonard Hill Did.—Professor Leonard Hill showed in a dramatic way how essential drafts are. He placed 8 students in a small sealed chamber which contained about 3 cubic meters of air. "At the end of half an hour they ceased laughing and joking and their faces were congested. The carbon dioxid had gone up to 4 or 5 per cent. Three electric fans were then turned on, which merely whirled the air about just as it was. The effect was like magic—the students at once felt perfectly comfortable, but immediately the fans were turned off again they felt as bad as before."

Temperature.—Man can stand a temperature of —75° and as high as 250° F. for a short time. Boiling temperature is 212° F., but dry heat is more endurable than moist heat. In fact, extremely low or extremely high temperatures are much better borne when the air is dry than when it is damp. A temperature of freezing in Buffalo or Baltimore or New York is much more penetrating and chilling than a temperature of 10 degrees below in Denver or some other dryer climate. The moisture or humidity of the atmosphere influences our sensations more than the temperature. In general, it may be said that moist air is depressing and enervating, and dry air is tonic and stimulating; also warm air is depressing, while cold air is tonic.

The ideal temperature for living-rooms, schools, halls, and office buildings is from 65° to 68° F. From the standpoint of hygiene and efficiency it should be the endeavor to maintain this average all the year round. In summer the air may be cooled, just as it is heated in winter. For hospitals, particularly, a system of air

cooling is a great boon to the patients. For sick babies, babies with cholera infantum, and other summer diseases cooled air is a life-saving measure.

Professor Rosenau says, "A man is much less efficient in a warm atmosphere; hence it is an advantage to both employer and employee that work be performed at temperatures below 70° F. by the wet bulb. At the lower temperatures work is done faster, more efficiently, and with less fatigue, discomfort, and injury to health. . . . In a warm moist atmosphere . . . the workers instinctively avoid the discomfort of overheating themselves through lessened exertion."

Humidity influences the output of heat from the body by increasing the conductivity of the atmosphere for heat and by interfering with evaporation. The former effect explains why cold moist air is chilling, the latter effect explains why warm moist air is enervating. The degree of humidity is thus more important than the mere temperature of the air. But there is a neutral zone in which the humidity is of little consequence, and that is around 68° F. If your furnace will give you 68° F. as a steady diet, neither more nor less, the air in your house is just about ideal.

Odors and Nuisances.—In the dark ages people had to depend upon their senses to avoid pestilence. Today we know that bad odors are practically negligible so far as the interests of health are concerned. A nuisance, in the words of a state's attorney who was called upon to define the word in a statute, is anything deemed detrimental to life or health. A fly is a nuisance, as is a person who expectorates on the street, but a mere stench is not a nuisance in itself. Decaying animal or vegetable matter does not breed or spread disease. Sewer gas,

that great bugaboo upon which our friend the plumber loves to hold forth eloquently, is absolutely harmless, even in a sewer. Men working in sewers remain hale and healthy though they breathe all day long the unpleasant odors and the excessive amount of carbon dioxid (about one-fourth as much as is contained in expired air, or perhaps as much as you might be compelled to breathe in a large brewery).

The odorless nuisance is the dangerous one. The mosquito, the fly, the tick, the bedbug, the body louse, the wharf rat, and perhaps the family cat are the real live nuisances which really carry disease. But the greatest of all nuisances is the human carrier of typhoid, diphtheria, and the Doctor's Friend, the common "cold."

Disease Never Spreads Through the Air.—It is true that medical authorities formerly believed that small-pox, diphtheria, influenza, and certain other infectious diseases were conveyed sometimes long distances through the air—even across the ocean, as was suggested when the first great epidemic of influenza reached America. But more intimate knowledge of the causes of disease and the conditions necessary for the survival and growth of disease germs has satisfied all modern authorities that disease never travels through the air. You need not hold your breath when passing by a house where you see a diphtheria placard. You need not feel alarmed if a tuberculosis or small-pox hospital is established in your vicinity. Nor need you take much stock in the annual explanation for the "great amount of sickness this spring"—the open winter, the opportunity for germs to blow about, and all that imaginary stuff. germ-free air is innocent. Old traditions die hard.

Dust is a normal and necessary constituent of the

air. "Star-dust"—planet dust torn from the earth by winds, the carbon in smoke, salt from sea spray, the dust from volcanoes, and perhaps interplanetary particles from unknown worlds—this dust is all that prevents the air from being unbearably damp; it precipitates the moisture in the form of rain and helps to form clouds, mists, and fogs, which control temperature. Without dust everything would be damp and dank all the time. The air would be forever misty and wet.

Indoor dust is ordinarily more injurious to health than outdoor dust, because the sunlight doesn't get a chance to disinfect the indoor kind. But indoor dust only does harm when deposited on food, in drink, or on fingers or in the breathing passages. The dust in behind the grand piano or the precious old what-not won't do any harm until some person stirs it up with broom or duster. Housecleaning is a dangerous occupation for the innocent bystander. Robinson Crusoe's excellent health—well, R. C. had no wife!

Wet cloths are the only safe and proper kind of dust cloths. And a wet mop or broom is the only proper way to sweep a floor. Rugs and carpets may be cleaned with the vacuum cleaner, never with the broom or sweeper that stirs up a dust.

Such germs as tubercle bacilli, the colon bacillus, various cocci, including the pneumococcus (pneumonia, bronchitis, and "cold germ") have been isolated from dust particles taken from a floor.

Outdoor dust, at least street dust, in the summer time, is an important factor of disease. For instance, lockjaw is liable to develop when a wound of the slightest kind is infected with street dust, and for this reason any street accident in the warmer part of the year may cause a

wound which demands, as part of the treatment, a prophylactic dose of antitetanic serum.

All kinds of dust irritates, and some kinds of dust, like stone dust, coal dust, iron dust, may injure the delicate lining of the lungs and pave the way for the entrance of tuberculosis or other infections. Bronchial troubles are often produced by the dust of knitting mills. Oiling the floors will keep down dust.

Undeveloped Breathing Muscles.—The muscle," which surrounds the alimentary canal all the way, is pretty well developed in most people, though it occasionally gets kinked. But the breathing muscle is surprisingly weak in the average human being, almost always weak in the weaker sex. The reason for this is that the average human being doesn't know how to exercise his breathing muscle; or, when the a. h. b. happens to be a member of the weaker sex, the breathing muscle is paretic from prolonged use of the splint. If a splint is worn for a long time the muscle or muscles whose function it monopolizes or renders needless will atrophy and weaken. The corset is one of the finest splints ever invented.

Costal Breathing vs. Abdominal Breathing.—Any elocutionist, athlete, or vocal artist knows that abdominal breathing is more efficient than costal or chest breathing. Men normally breathe with the diaphragm and abdomen, whereas women—corsetted women—breathe with the diaphragm and upper chest. They have to. The abdomen is splinted and can't help any. Indian girls who had never worn corsets breathed with the natural abdominal type of breathing, Dr. Thos. J. Mays observed, when he examined 82 young Indian girls some few years ago.

Type of Breathing Responsible for Much Suffering.—The costal type of breathing, we believe, is responsible for a great many of the painful functional conditions of the female pelvic organs. At any rate, simple practice of abdominal breathing serves to relieve many a case of painful and excessive periods in young women.

A Woman Physician Discovered This.-Dr. Clelia Duel Mosher, Medical Adviser to Women, Stanford University, found that a simple breathing exercise corrects a large number of cases of difficult and painful menstruation. The patient lies upon her back with the knees flexed and all tight clothing removed. Her right palm rests upon the abdomen. She takes a slow, steady inspiration, trying to see how high she can lift the hand; she then expires slowly, without jerky movements, trying to see how far the hand will fall as the abdominal wall descends. This is repeated ten times, night and morning for at least three months, with no interruptions. Sometimes slight dizziness or discomfort is felt the first few times the exercise is taken, but this soon disappears. Besides lessening pain and diminishing excessive flow, Dr. Mosher asserts that this exercise often relieves the patient who has only an occasionally painful or excessive period.

How Long Can You Hold Your Breath?—An excellent test of one's physical condition, and a reliable indication of one's ability to take an anesthetic, is the measurement of the number of seconds one can hold the breath. The normal average is forty seconds. In cases of impaired heart, kidney disease, diabetes or, in fact, any serious physical defect the "breaking point" (at which breathing must be resumed) is less. When it falls below twenty seconds the surgeon hesitates to give

an anesthetic. What determines a person's ability to hold the breath is, of course, the amount of oxygen stored in his blood and tissues; if this is reduced—that is, if the carbon dioxid content of blood and tissues is raised—the breath cannot be held as long as forty seconds. Accumulation of carbon dioxid in the blood and tissues is spoken of as "acidosis," part and parcel of the several

diseases just mentioned.

By a little trick of preparation any normal person can hold the breath two minutes. You simply have to overfill the blood with oxygen by breathing a little more deeply, though not forcibly, and not faster than the normal eighteen or twenty times per minute, for, say, two minutes, then hold your breath. You can "stick it" to the two-minute point or longer without difficulty. If one could thus prepare, and then inhale one or two breaths of pure oxygen, it would not be difficult to hold the breath four minutes; indeed, a student at Yale in this way held his breath eight minutes and thirteen seconds. Breath-holding contests can do no harm. The initiated contestant has an obvious advantage over his uninformed opponent, and it isn't fair for him to win a wager on the test.

Unexpanded Lungs.—Incipient tuberculosis generally starts in one apex or at the extreme base of the lung. One reasonable explanation for this is that the average person doesn't often expand his lungs to the fullest extent, and the apex and base of the lung remain weak and poorly nourished, hence less resistant to the ever-present tubercle bacillus.

Posture is largely to blame for unexpanded lungs. A great many young people—and tuberculosis is the great destroyer of youth—do not know how to stand and sit

erect, with the chest up, shoulders thrown downward and backward, chin drawn in toward the collar, and abdomen properly restrained by its own muscles. As for girls and women, the corset-habit, weakening abdominal support, contributes toward faulty posture. But it is hard to convince women of this. We shall endeavor to do so in another chapter.

Air is Practically Germ Free.—The Listerian era of antiseptic surgery has passed and the modern aseptic era has arrived. Lister and his followers believed the air itself contained disease germs and would infect wounds, and hence sprayed the operating-room with carbolic spray, which proved poisonous to patient and attendants alike. Nowadays the operating-room is kept free of dust and insects, but otherwise the air is deemed germ free, and it is germ free so far as wound infection goes. It is true that minute scientific tests will sometimes detect a few germs in the air, but not sufficient to be in any sense a menace to wounds or to the health. Modern sanitation is based upon the knowledge that infectious or contagious disease is never air borne. Bacteriologists have even proved that the expired breath under normal conditions contains no germs. Indeed, it is only the invisible spray or fine droplets of moisture thrown off from the nose or mouth in talking, laughing, but especially in open-face sneezing and coughing, that must be guarded against in nursing or associating intimately with the sick.

Climate.—A good climate is one that can be enjoyed for the greatest number of hours and days out of doors. No climate will cure consumption or any other disease. The only reason for changing climate is to secure the advantages of outdoor life. Huge volumes are written

about climatology, but, so far as our personal knowledge goes, that is the sole advantage of climate in the final analysis. Of course, the elements of temperature and humidity enter into the question, but whether it be a warm climate or a cold one, a damp or dry one, the real test, we believe, is the time comfortably spent out of doors.

It is a familiar saying of patients that "I suppose our damp climate and our situation in the valley causes so much catarrh." Perhaps so, but if it does cause "catarrh," we strongly suspect it works by keeping the fearful citizen too much indoors in his overheated and, therefore, too dry atmosphere.

Consumptives and others contemplating going west, east, south, or north for health should go where the medical attendant advises. Furthermore, and it is of vital importance, it should be somebody's duty to see to it that sufficient funds shall be forthcoming to meet the patient's wants for ten months at least, and as for the consumptive, at any rate, nothing short of an assured allowance of \$15 per week during all of this time can be deemed sufficient for ordinary wants. Pitiable, indeed, is the plight of the unfortunate who rushes off to some noted resort only to become an object of charity among strangers. If we know anything about it from observation, experience, and study, one is quite as likely to recover from tuberculosis at sea-level as at any higher altitude or at any resort in the United States, provided one has, first, a good doctor, and, second, the right food, rest, medication, and open-air care.

In general, it may be said that a warm moist climate is depressing, a cold dry climate is stimulating. A warm dry climate is good for certain cases of Bright's disease

and chronic bronchitis or asthma. A cold dry climate is good for many cases of tuberculosis, anemia, and neurasthenia. A moderate elevation is good for most elderly patients. A higher altitude is good for many chronic diseases of persons below middle age.

Perhaps the most frequently disappointing of all human adventures is changing climate in order to avoid or obtain relief from a certain disease. People will have their little adventures, though. They don't seem to realize that medical advice might be worth considering when such an important move is contemplated.

Belt Versus Suspenders.—In all seriousness let us here call attention to an evil of masculine attire which. if not so vain a thing as a woman's corset, is at least as unnecessary. We refer, of course, to the gentleman's belt. In these parlous days suspenders seem to be losing their hold on the hearts, lungs, and livers of mankind, and the belt is being more and more substituted to support the trousers. If a belt is worn tight enough to offer security to the mind of a stout man it must inevitably interfere with the expansion of his chest, for he can never feel quite at ease unless he is pushing his "stomach" out firmly against the belt, and any stout person who has ever attempted to substitute the frail but handsome belt for the homely but reliable suspenders knows how impossible, how positively unsafe it is to expand one's chest fully while maintaining a steady pressure on one's belt. The belt, worn by a stout man, is accountable for a great many ills stout flesh is heir to, we think, and that it tends, like the woman's corset, to encourage still more adiposity we are thoroughly convinced. For the skinny man, as a mere ornament, a belt is all right, but never for the fat man. Fresh air is universally con-

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ceded a great boon to the health, but you know one has to fill his chest with it in order to obtain the benefits.

Air-baths.—Is there anything in the insane notion of taking "air-baths," that is, exposing the naked body as far as possible to the air? Yes, there is much in it. In the first place, it is getting back to nature, and when you turn back to nature you are generally doing a healthful thing. The skin doesn't get a fair chance under so much clothing as most of us wear. No matter how frequently we bathe, the skin is handicapped by the almost continual interference with evaporation of perspiration by the clothing. And further, the skin likes the light, the actinic or chemical influence of the sun's rays. An air-bath, even if it lasts but a few minutes, is good for the health. If taken outdoors in the sunlight it is positively tonic.

At Leysin, Switzerland, very high in the mountains, they cure bone tuberculosis by air-baths. The sunlight is very strong there. The baths have to be given in very gradually increasing dosage—only the feet and legs being exposed for five or ten minutes at first. Children get tanned as brown as Malays and run about on the snow with nothing on but shoes. The same treatment is successfully carried on at Perrysburg, N. Y. (near Buffalo), and at various places in California and elsewhere.

At the seashore or in your own backyard an air-bath or sun-bath is an excellent thing for the blood. An average increase of 10 per cent. in the number of red bloodcells is noted at Leysin in the first three days of air-bathing.

CHAPTER IX

THE SKIN, THE SCALP, THE HAIR, AND THE NAILS

THE surface of the skin, the part that raises over a blister, is the epidermis. In the deeper layers of the epidermis is most of the pigment which determines the color of the skin, the negro skin having most pigment and the blond white skin the least. Beneath the epidermis is the "true skin" which gives the skin its peculiar lines and marks, such as make up the thumb-print. skin is perforated by blood-vessels, lymphatics, and nerves; it affords lodgment to hair roots and gives passage to the ducts of the sweat-glands and oil-glands. The third layer of the skin is the loose connective tissue which contains fat, arteries, veins, and lymphatics. This fatty layer gives the skin its smoothness and acts as a protective covering or garment for the body. It contains more fat in women than in men, giving the womanly form its roundness and soft beauty, and incidentally, perhaps, explaining why woman can comfortably expose her neck and chest to the wintry blasts when mere man would almost freeze to death if he were to dress that way. Incidentally, also, the fat layer of woman's skin enables her to wear her favorite gauze "winter-weights" with physical as well as mental comfort, whereas her skinny consort, with his meager subcutaneous blanket of fat, has to put his flannels on eventually, whatever freakish pranks he may cut in the heyday of youthful vitality.

Why Sickly People Look Yellow.—The relative amount of pigment in the skin determines the color, varying from coal black, through Malay brown and Chinese yellow, to the Scandinavian pale-blue blond. But in the white race the fatty layer also contributes to the tint of the skin. "Flesh" color is a combination of blood red and fat vellow. Now, if you drain the blood from the skin it looks very vellow. If one is very anemic or chronically ill, or even suddenly taken ill, the blood is either weak in color or quantity or suddenly withdrawn from the surface, and in either case the skin will assume a vellow appearance—its natural color minus the tint of Thus a great many invalids look, to the the blood. casual observer, as though they have "liver trouble." Of course, when the skin is stained yellow by bile the "whites" of the eyes, the lining of eyelids, lips, the gums, the perspiration, and everything except the stools will be stained yellow, quite unlike the color noted in severe anemia, Bright's disease, or cancer.

Perspiration.—The skin excretes water, certain solids, carbon dioxid, and organic matters. If the surface of the body were varnished, death would occur very shortly from excessive radiation of heat, not from retained poison. The quantity of materials excreted by the skin is much less than the kidneys and lungs excrete. The skin is always perspiring, whether the perspiration is perceptible or not. Sweat glands are largest in the armpits, where some of them are as thick as $\frac{1}{12}$ inch, and most numerous on the palms and soles, where nervous and other influences may make them very active. The average quantity of perspiration in twenty-four hours is perhaps a little less than a quart. Evaporation continually carries it away. A man working in intense heat, as in an iron

mill, may lose as much as 3 or 4 pounds in an hour. Of course, he must compensate for the loss of water by drinking large quantities of water. It is a paradox, yet true, that one who perspires too much must drink plentifully of water and one who perspires too little must do likewise.

Chemically, the sweat is very much the same as the kidney excretion, though not so high in specific gravity (1003 or 1004 specific gravity as compared with 1016 or 1020). But the sweat contains urea and other elements found in urine. Volatile fatty acids give the sweat its peculiar odor. If the kidneys are deficient or if the lungs are deficient more work is thrown upon the skin, and often a characteristic unpleasant odor is imparted to the sweat. In the armpits, the groin, and between the toes the sweat always has a marked odor, which in some persons may be very disagreeable. The sweat in the armpits sometimes has a yellowish color and stains the clothing.

Stopping Perspiration in Armpits.—Is it harmful to use preparations to stop the perspiration in the axillary region under the arms? Not if the preparation doesn't inflame the skin. A good many of the proprietary preparations are very irritating, and those which do not irritate are not very efficacious. But there is no harm in stopping the perspiration. Nor is there any harm in shaving the hairs under the arms or removing them by chemical depilatories, provided the chemical does not inflame the skin, as many depilatories do. Of course, no chemical will permanently destroy hair anywhere. The only known agent for that purpose is the electric needle.

The Oil Glands.—Certain little glands supply an oily substance which keeps the skin naturally soft and pliable and serves as a natural oil for the hair. These

glands, called sebaceous glands, empty their secretion upon a hair-shaft usually.

When the duct of a sebaceous gland becomes occluded with dust and dirt, such as covers even the cleanest looking skin, the sebum accumulates in the duct and this is known as a comedone or "black-head." Blackheads are more or less present in the skin of the nose and the cheeks always, but only when they become very large and noticeable do they excite interest. "Enlarged pores" are dilated or inactive sebaceous ducts. To apply astringents with a view to correcting "enlarged pores" is generally love's labor lost. When "Beauty Specialist," in one of those faked "Health Hints" or "Beauty Hints." and other "Madames" or "Mademoiselles," whose contributions are generally signed "Adv.," suggest to "Marie" or "Discouraged" that a little "kardene," "parnotis," or "almazoin" will reduce those enlarged pores, some one is about to be taken in, the stuff with the funny name being the joker in the disguised advertisement.

Wens.—A wen is a cyst or sacculated sebaceous gland. The duct of the gland has been completely obstructed and the sebum has accumulated in a cheesy mass, perhaps the size of a marble or larger. Wens appear mostly upon the scalp. There is but one sensible relief—have the cyst removed by the doctor. It is a simple, painless, trivial little bit of minor surgery, with no afterdressing or discomfort to fear. Sometimes a wen becomes infected, inflamed, and very troublesome. At best it is an ugly looking thing and a useless ornament which one has no right to carry around. The little sac must be removed completely. Merely opening and squeezing out the cheesy contents never helps but for the time being.

Acne Vulgaris, Meaning Pimples.-In youth the rapidly maturing skin cells sometimes seem to grow faster than the old cells can be cast off. This appears to be the only logical explanation for the condition of acne or pimples. Of course, bacterial infection of the oil-gland or duct is essential as a cause of acne; otherwise there would be only an annoying condition of blackheads. Contrary to the vulgar opinion, a fine crop of pimples on the face, neck, chest, and back of a young person doesn't signify a thing except exuberant vitality. Pimples don't look very pretty when at full bloom, but the owner of them has nothing to be ashamed of, at least nothing more than youth. We defy any competent observer to show a definite relation between acne and habits, constitution or diet. Pimples just come, and that is all there is to it.

Well, what are we going to do about it?

If the bowels are constipated the diet and suitable remedies must be adjusted to correct that undesirable condition, but the bowels and every other function may be absolutely normal.

Each second night the patient should bathe the face in a basin of very hot water containing a tablespoonful of boric acid. This flushes the skin with fresh blood and softens the caps of the pimples and tends to soften the hardened contents of the black-heads. Then the pus should be squeezed gently out of each yellow pimple by pressing down upon the skin with a finger on either side of the pimple, the fingers being covered by a clean cloth. Also press out the black-heads in the same way. Then dry the face thoroughly and rub in about each inflamed pimple a very little of $\frac{1}{2}$ of 1 per cent. ammoniated mercury ointment on the finger-tip—every

second night is often enough to do all this. If the skin is very tender the U. S. P. boric acid ointment may be used instead of the ammoniated mercury ointment, which sometimes irritates. The purpose of the ointments is to exert a local antiseptic action.

In obstinate or long-standing cases of acne, or cases in which there is considerable thickening and redness about each pimple, by all means the best treatment is a course of vaccines administered by the family doctor. From a dozen to two dozen injections must be taken, and the appreciable full effect is seen weeks or months after the treatment is concluded.

Colored Perspiration.—Occasionally the perspiration on the lower eyelids is blue—in hysteric women. Reddish or yellowish perspiration is not unusual in the armpits. Jaundice, constipation, and the ingestion of certain medicines may produce colored perspiration. Red sweat may be produced by a growth of Micrococcus prodigiosus on the hair—a harmless microbe. For the local relief of these conditions bathing with water containing a large amount of borax, and the application of an ointment consisting of 2 per cent. salicylic acid, 5 per cent. sulphur, 80 per cent. lanolin, and 12 per cent. vaselin is useful.

Odorous Perspiration.—This is general in the negro race, but usually only local in the white race. The armpits and the feet are the favorite situations, and the odor varies from that of violets to that of—well, to put it inelegantly but exactly—unwashed feet. The soles are usually tender, sodden, and sore. The odor is produced by decomposing organic material in the sweat—fatty acids chiefly. The treatment consists of washing the affected parts twice a day with soap and water, putting

on clean stockings each time—preferably light weight woolen stockings or silk stockings—and wearing two pairs of shoes alternately. It is well to go barefoot and allow the air to reach the skin as much as possible. Cork insoles are helpful. They may be saturated with boric acid solution and dried before using. Once a day the skin may be mopped with a solution of salicylic acid, I ounce; powdered alum, I ounce; alcohol, ½ pint.

"Liver Spots," or Chloasma.—So-called "liver spots" or "moth patches" are pigmented spots in the skin—black, brown, or yellow. This pigmentation may appear after the use of blisters or irritating applications of any kind. Sometimes it follows sunburn or prolonged scratching. Chloasma as a concomitant of pregnancy and pelvic troubles in women is common. There is a temporary darkening under the eyes during menstruation in some women, and this may become permanent in time. The spots may be made less conspicuous by touching them occasionally with dilute acetic acid. Peroxid of hydrogen will temporarily diminish the stain. The liver has nothing to do with the condition.

Eczema may be considered a catarrhal inflammation of the skin, characterized by more or less redness, itching, weeping, crusting, scaling, or cracking. A great many skin diseases are mistaken for eczema or "salt rheum" or "tetter," as it is called. Untold harm is done by experimenting on various "cures." Of course, there is no one remedy, local or internal, suitable for all cases of eczema, because so many different local and internal factors may produce the disease in different persons. Occupation, diet, and dress may be important factors. Only a skilled physician is capable of diagnosing eczema from a dozen or more skin troubles it may closely resemble, and

only a physician can intelligently treat the disease. We have repeatedly observed cases of scabies (the itch), syphilis, impetigo, and dermatitis, and even psoriasis and lupus (tuberculosis of skin) being treated under the mistaken notion that it was eczema. Nostrums alleged to drive "humors" out of the blood and to heal eczema are plain unadulterated snides for the unwary. Every case must be treated according to individual conditions present.

Hives and Erythema.—Urticaria, or hives, or nettlerash, and erythema are similar skin troubles, differing chiefly in the shorter duration of hives, and the larger wheals, welts, or elevated patches present in hives. Both diseases come on rather suddenly, itch or burn intensely, and may be produced by particular articles of diet. Erythema, in various types, is apt to appear as a result of idiosyncrasy to certain drugs, chemicals, or serums, in the course of certain general ailments and as a complication of certain infectious diseases. Neither erythema nor hives is contagious.

Hives looks like great mosquito bites, or like the welts raised by a whip. A wheal will rise, say, on the forehead, and disappear in a little while. The ephemeral character of the wheals is characteristic of hives. Attacks may be brought on by eating strawberries, cheese, pickles, shellfish, mushrooms, pork, sausages, and various other articles. Constipation and worms (in children) are sometimes the cause of hives.

The treatment for hives or erythema, in so far as the patient can manage it, is, first, a short fast. An active cathartic to empty the bowel. Avoid scratching. Take tepid or warm baths with several tablespoonfuls of soda (saleratus) in the tub. Then dry by patting with

a towel and powder the skin freely with cornstarch. The use of a calamine lotion relieves the itching as well as anything. (See Appendix.) In severe cases the druggist may include about $\frac{1}{2}$ of 1 per cent. of phenol (carbolic acid) in the formula when mixing the lotion. Hives lasts only a few hours, but erythema lasts a week or ten days.

Favus is a very contagious, parasitic disease of the scalp, seen mostly among children in tenement districts. It resembles a patch of ringworm, the spot being covered with yellowish crusts and the scalp being bald inside the borders of the patch, which may be small or cover a large area of the scalp. The disease sometimes affects the skin elsewhere on the body. A peculiar mouse-like or menagerie odor is characteristic. The treatment is epilation of the hairs in the affected area and the persistent use of suitable parasiticides, only under a physician's directions.

"Cold Sore," Fever-blister, or Herpes.—An eruption of so-called "cold sores" may appear about the mouth, on the face, the forehead, or anywhere on the skin over the area of distribution of some particular nerve. Herpes zoster or "shingles" appears usually on the side of the chest, but not rarely on the arm, leg, abdomen, or back.

"Cold sores" appear in the course of various acute respiratory infections; with digestive derangement, in women at the menstrual period. The condition is of nervous origin. The spot may be touched frequently with spirits of camphor or kept coated with plain zinc oxid ointment.

Herpes zoster is very painful, or, rather, the neuritis or nerve trouble underlying the skin eruption is. It looks like a little crop of blisters. The treatment is rest, avoiding breaking the blisters, and such internal or local treatment as the physician finds necessary.

Superfluous Hairs.—The natural causes of excessive growth of hair are obscure. It is believed that disturbances of certain internal secretions (ductless glands) may be concerned in abnormal hair growth. The local factors in women are irritation from face creams and massage used excessively, mistaken efforts to destroy the fine downy hair that covers every woman's skin, the stimulation of alleged "depilatories" of a chemical character, and of the razor. We know but one entirely dependable agent to destroy hair, and that is the electric needle. The needle is tedious, expensive, but efficient and comparatively painless. Unless applied by a physician or under his direction the electric needle is apt to be a disappointment. The x-ray is sometimes used with success where a large number of hairs are to be destroyed.

Hairs may be rendered less noticeable by bleaching with peroxid and ammonia (3 parts peroxid to 1 of weak ammonia-water). A good many alleged "complexion beautifiers" appear to stimulate hair growth, and that is about all the effect they have.

Impetigo.—An eruption of several thick-walled, raised, pea-sized yellowish or whitish pustules on face, hands, feet or legs, or elsewhere, without itching, drying after several days into a crust, falling off and leaving a reddish spot, but no ultimate scar. Probably it is not contagious. But there is a form of contagious impetigo occurring in children or babies, often in an epidemic, which resembles the simple impetigo closely, but the pustules seem more superficial—look as though they are "stuck on the skin." The disease, in simple or contagious form, must be differ-

entiated from chicken-pox, pemphigus, and other skin diseases by a competent doctor.

Keloid is a hypertrophied or overgrown, heaped-up scar. It often develops in the scar of a blister. Shooting out from it are little projections like roots. It tends to recur if removed. In negroes it is rather common. It gives considerable pain or unpleasant sensation of drawing or contraction in the skin. Electrolysis (by the electric needle), surgical removal, or x-ray treatment may be successful. It rarely undergoes spontaneous involution.

Leukoderma.—Also called vitiligo and piebald skin. It is a rare condition, in which patches of skin lose all their pigment and become perfectly white. If on the scalp, the hair of the patch turns white. No positive cause or remedy is known for it.

Lupus is tuberculosis of the skin. It is often mistaken for chronic eczema, in fact, a great many skin troubles are "eczema" in the lay mind. The disease occurs most commonly on the cheeks, about the eyelids and nose, and on the scalp. The patch has a peculiar violet shade, is never moist or weeping, burns or itches but little if any, remains for months or years without much change. If it heals, it is likely to leave a scar. If on the scalp, it leaves a bald spot. The treatment is that of tuberculosis elsewhere—outdoor life especially. Sunlight and its artificial substitute, the Finsen light (a powerful electric light with the heat rays filtered out), are successful remedies.

Prickly heat, or miliaria, is an eruption of many little papules or vesicles upon the openings of the sweat-glands, seen in babies and fat persons. It tingles rather than itches. The skin may be bathed in salt water, dried, and powdered with cornstarch or plain talcum. The clothing should be light and frequently changed.

Mole, or "mother's mark," is a congenital pigmentary spot in the skin, often accompanied by a tuft of heavy hairs and thickening of the skin underneath. "Marking" is, of course, a superstition founded on ignorance of embryology, a typical old fishwife's theory made to retail over the back line fence.

By all means the best treatment for moles is electrolysis with the electric needle in the office of the family doctor or some one he will recommend.

Birth-marks, or Port Wine Marks, or Vascular Nevi.— These are congenital spots on the skin composed of minute blood-vessels. Their distinguishing feature, as from moles, is that pressure with the finger momentarily drives away the color. Electrolysis, as for moles, is the best treatment. Small ones in children may disappear spontaneously after a year or two.

Pediculosis, or Phthiriasis, or (in good round United States) Lousiness.—Three varieties of lice infest the human species, and we will discuss them in order.

Head Louse.—Favorite seat, back of head and the sides. A louse never bites; he inserts his haustellum in the skin and sucks what nourishment he thinks he needs. This, and the travels of the louse on the scalp, explain the itching. Scratching adds to the irritation and starts an inflammatory reaction. The hair becomes matted and little white spots attached to the hair shafts (the nits or eggs of the louse) are easily visible and not so easily removed. Any pustular or eczematous eruption on the back of the neck and scalp should arouse suspicion, especially in a school child. Even if the louse eludes capture, the nits will be found—if the trouble is pediculosis.

Treatment.—In males cut the hair closely. In any case soak the hair in kerosene night and morning for two days. Then shampoo with soap and water. If any nits remain they can be removed with the fine-tooth comb every grandmother treasures among her heirlooms, or by pulling the hair through a cloth saturated with vinegar. As a substitute for the smelly and rather irritating kerosene soaking, a 5 per cent. carbolic acid solution may be employed, but must be rinsed off the hair and scalp thoroughly after twenty minutes.

The Body Louse.—A little larger, a little more exclusive, a little more dangerous than the head louse is the body louse. He inhabits the seams of clothing and lays eggs there, only making forays when the pangs of hunger demand satisfaction. The sure sign of the body louse is a small hemorrhagic spot in the skin where he has inserted his haustellum for nourishment; that plus long parallel scratch-marks made by the victim's fingernails. The lice dwell in both woolen and linen clothing, being indifferent about apartments.

Treatment for body lice must be directed toward the clothing. All the skin requires is a bath. The clothing must be thoroughly baked or sterilized in a steam sterilizer or boiled.

Crab Louse, alias Pediculus Pubis.—This is the largest and most furious of them all. Its favorite feeding-ground is the hair of the pubic region, but it does venture forth upon the abdomen, chest, in the armpits, sometimes even into the beard and eyebrows. Itching, scratch-marks, and the lice themselves may be discovered by a sharp eye, for they are nearly transparent, usually attached to the hairs head downward close to the skin.

Treatment.—Freely smear the affected area of skin with standard ointment of ammoniated mercury.

Pemphigus.—A serious disease of the skin characterized by the appearance of successive crops of bullæ or large vesicles or pustules. Little is known about the nature of pemphigus. It often ends fatally.

Pruritus, or Itching.—Itching of the skin in the absence of visible local cause is called pruritus. be local or general. Some functional disturbance of the nerves is a factor, and any condition which may give rise to auto-intoxication, such as constipation, overeating, kidney disease, diabetes, excessive use of tobacco, alcohol, coffee, tea or drugs, may cause pruritus. Piles, fissure, worms, and even suggestion may cause itching. Heat and cold sometimes seem to produce itching of the The treatment must be directed toward the general condition of the patient. Locally, peroxid, or glycerin, or vinegar, or a weak soda solution, or 10 per cent. alcoholic solution of ichthyol, or 1 per cent. carbolic acid solution may be tried. A very effective powder for strictly limited areas of pruritus is made by rubbing to a liquid I dram each of camphor and chloral, then rubbing this up with I ounce of powdered starch. underclothing gives relief to the itching some people have in winter. Less frequent bathing and avoiding soap will relieve the itching some people suffer after a bath. (See Appendix.)

Psoriasis.—A skin disease characterized by a rash which consists of red patches covered by silvery white scales which continually drop off in the form of bran. is very chronic, runs in families, occurs at any age, but mostly in early adult life. The specific cause is unknown, but it is believed to be a metabolic disorder depending upon some abnormality of the internal secretions. The disease is often mistaken for eczema. Treatment must be determined by the doctor in each individual case. A vegetarian diet has proved very helpful in many cases, and occasional bread-and-milk days are advisable if the patient is too well nourished.

Purpura is a condition in which there are hemorrhages into the skin not caused by direct injury. The spots resemble black-and-blue marks from blows, appear suddenly, and often give rise to unjust accusations, especially if the patient is an inmate of an institution. In some cases aches and pains called "rheumatic" attend the attack. The spots are sometimes like flea-bites, but have no central point. A purpuric rash generally accompanies scurvy. The disease is sometimes marked by serious hemorrhages from nose, bowel, or other mucous membranes.

The Itch, Scabies.—This affection is variously dubbed "Cuban itch," "seven year itch," and almost anything but plain itch. Our grandmothers knew it familiarly. they know it yet, even when it tries to masquerade as "eczema," "uric acid in the blood," and "hives." The disease is caused by a parasite barely visible to the naked, skeptic eye. It is conveyed through personal contact and on towels, borrowed clothing, even on gloves. The characteristic sign of the itch is a little whitish line perhaps & inch long, especially on the wrists, between the fingers, and in the armpits. This line is the burrow of the itch-mite, which eats its way under the cuticle and deposits its eggs in the burrow behind it. Scabies itches most at night under the warmth of the bedclothes. continues indefinitely, even "seven years," if not recognized and cured. One thorough inunction of the whole affected skin with standard sulphur ointment, after a

very vigorous scrub-bath is taken to soften the hard cuticle over the burrows, cures the itch for all time. But all clothing, bedclothing, towels, and other soiled articles must be baked or boiled before anybody handles them. One with the itch must literally wallow in sulphur ointment at least one night.

Barber's Itch.—Unfortunately, two very different diseases are commonly known as barber's itch—first, sycosis, which is a simple germ infection of the hairfollicles; and, second, ringworm of the beard, which is caused by a parasite, the tricophyton.

Sycosis is a group of pimples or pustules pierced by hairs, with more or less thickening and soreness of the skin here and there between the pimples. It most frequently appears on the neck, chin, or upper lip. It does not spread and is not particularly contagious. It is an obstinate condition to treat, however, the patient usually requiring internal medication, if not a course of autogenous vaccines, as well as local treatment of the skin.

Ringworm of the beard is at first a scaly patch with broken-off hairs projecting through it or, rather, several such patches, which gradually enlarge and coalesce. It comes on the lower part of the face and, unlike sycosis, spares the upper lip. Epilation and the persistent yet intelligent application of parasiticides of various kinds will ultimately cure ringworm of the beard.

Ringworm also affects the skin of the body, usually on the exposed parts of the skin, in the shape of round, scaly patches, ring-like; that is, spreading at the periphery and clearing up at the center. Children or adults have it. It is very easily cured by painting the patch with 10 per cent. alcoholic solution salicylic acid or tincture of iodin or 1 per cent. bichlorid of mercury solution. Ringworm of the scalp in children and babies is the most obstinate form of ringworm to cure. Besides the usual parasiticides the patient may require x-ray or other powerful measures.

Syphilis.—Although syphilis is a very common disease, and in the very "upper crust" of society, it is remarkable how rarely the skin lesions appear upon the face. In fact, it may be taken as a ten-to-one wager than any stranger one meets with a noticeable eruption on the face has something other than syphilis. But we cannot go into the subject here.

The Scalp.—In the mass of theoretic speculation upon the question of baldness we imagine we can discern certain truths worth emphasizing. That is the best way we know of presenting the matter in a work of this kind.

"The strength of an organ," runs an old medical proverb, "is determined by its use." The hair has long since been superseded by the conventional lid, so why should hair keep on growing? Women's hair tends to outgrow men's hair and to endure longer, we believe, because women, thanks to the freaks of fashion, do manage to give their scalps more air and light, and besides they do not often wear a tourniquet about the head, as men do in the bands of their hats. Furthermore, most women, at any rate, do give their hair better care than men do, brushing it more thoroughly and showing more anxiety about it and the condition of the scalp than most men do.

Why is mere man such a slave to convention and fashion that he must wear a hat, and a stiff-brimmed hat at that, even in the summer time when his head would be so much more comfortable uncovered? Why hasn't the staunch, self-confident sex sufficient courage to defy custom and leave off his hat when he wishes to? The average masculine lid is a thing of beauty and a joy while it reposes in the hatter's window. Why not leave it reposing there where it can give pleasure to the eye and pain to no one? And smirking Dame Fashion answers, "Yes, why not?"

Care of the Scalp.—The hygiene of the scalp and hair determines the preservation of the hair. Falling hair and baldness follow dandruff, but dandruff may be prevented or cured by proper care.

Shampoo.—How often should the hair be shampooed? This question is often asked by people who would never think of asking how often the body should be bathed. The answer is, As often as necessary to keep the scalp clean—once a week anyway, for exceptional cases once a month, and for those with much dandruff or whose work is very dusty once a day is not too often. Washing the scalp and hair can never do any more harm than washing the body. Scalp is skin; hair is a modification of skin. People who still fear they may "take cold" from a shampoo should be awakened from their Rip Van Winkle nap and reminded that we are well along in the twentieth century.

What kind of shampoo is best? What kind of soap? Plain toilet soap, such as Ivory, Pear's, or Fairy soap—these are preferable to "medicated" soaps. The important thing is to make sure that all the soap is thoroughly rinsed away when the shampoo is finished. If the hair is too dry after a shampoo, a small quantity of pure olive oil may be put on the scalp by rubbing with the finger-tips, not on the hair, or vaselin may be preferred.

Brushing.—All men and many women do not give

sufficient time to brushing the scalp. At least once a day the scalp should have one hundred strokes of the brush, and at least once a week the brush should be well washed and disinfected, preferably by direct sunlight. A brush with real pig-bristles is most economic. Perforations in the back aid in washing and drying the brush. An excellent brush is the "Hughes Ideal," which has a long bristle embedded in a pneumatic pad, thus permitting vigorous brushing of the scalp without injury by the strong bristles. Brushing should be kept up until the scalp feels warm, but not long enough to cause irritation or tenderness.

Combing is proper for the hair, but the comb should not be used on the scalp. The fine-tooth comb of our grandmothers was an instrument only fit to hunt for "company." Combing often sets up eczema in children's scalps.

Do not wet the hair except to wash it, and then always dry it thoroughly, and if you shampoo often it is well to rub a little sweet oil or vaselin into the scalp to take the place of the natural oil of the hair.

Dressing the Hair.—The simplest mode of dressing the hair is the most hygienic and generally the most beautiful. A handsome woman looks best unadorned, and a homely woman looks ridiculous all frizzed and curled and furbelowed. The curling-iron ruins the hair, makes it split at the ends, and fall out in time. Curling-papers are less injurious, but injurious. For young girls the pendant braid is the preferable mode of hair dressing. Large rubber or bone hair-pins, perfectly straight, are preferable to any other means of retaining the hair. Never draw the hair tight upon the head when doing it up. Patent preparations alleged to curl the hair either

do not do so or ruin the hair in a very short time. Straight hair properly cared for and simply dressed is quite as attractive as curly hair. The woman sho scorns to paint should certainly hold aloof from the curling-iron and curl-papers.

Cutting the Hair.—It is a rule to which there is no sound exception that a woman's hair should never be cut for any reason whatsoever. There is a superstition that clipping the hair conserves vitality when the patient has typhoid and other severe illnesses. This is some more of the fishwife nonsense still believed by ignorant folk. Another foolish and harmful delusion is that singeing the hair improves it. It is precisely like singeing the nails or the teeth—it is an invention of the barber who knows nothing of the anatomy or physiology of the hair.

Children's hair should be kept short until six or seven years old. Little girls' hair should never be cut after the age of seven. The less the hair is cut, the finer it remains.

Barber Shops and Infection.—The reason why dandruff is wellnigh universal, we think, is the infection which necessarily occurs from the barber's hands, brushes, and other implements. It should be the inflexible rule to take a thorough shampoo immediately upon reaching home after a visit to the barber. This applies, though in less degree, to women's hair-dressing establishments.

Because a shop calls itself "sanitary" or "antiseptic" is no reason for security, because, when we consider the abandoned use of these words in modern commercial life, we know they mean nothing at all. A visit to a barber is to be looked upon as a regrettable necessity, to be made as rarely as possible; and likewise a visit

to the ladies' hair-dressing parlor. It should not be a matter of law, but rather of plain decency for the barber to scrub his hands thoroughly after each customer and to take fresh utensils from the sterilizer for each customer. It is rather amusing to see the "antiseptic" precautions taken by some barbers who have all the fixings of the supply house, but not time to wash the hands between customers. Never under any circumstances should a barber be permitted to dig out what he calls "dead hairs" or "ingrowing hairs," nor to apply caustic or other medicines to the skin or scalp. It is the height of femininity for an alleged man to loll in the barber's chair while tonics and "egg shampoos" and massage and all the other time-consuming antics are carried on for his entertainment. As for any tonic or healthful influence, the customer might just as well go out and butt his silly head against the lamp-post.

Shaving.—Will somebody explain why it is that when we are boys with downy cheek we crave a growth of dirty beard and tease it along by surreptitious shaving, and then when the beard comes and steals away twenty minutes a day of our time for the rest of life we would pay fabulous sums for something to prevent its growth? If one must shave, he should do it himself, as a time-saving proposition if not for hygienic safety. If he can't wield the razor he can certainly manipulate one of the refined hoes called safety razors.

Hair Dyes.—Just as we hold that a woman is justified in applying "war paint" if it really makes her look more attractive and she is careful to avoid the dangerous preparations, so we believe it is perfectly right and proper for any one to dye the hair in order to retain one's grip on youth and perhaps a job. There are many proprietary hair dyes, some good and some injurious or frankly poisonous.

One formula, suggested by Leonard, is thus given in Jackson and McMurty's "Diseases of the Hair":

(No. 1)	R.—Bismuth citratis 1 ounce.
	Alcohol 5 drams.
	Aquæ rosæ 2 ounces.
	Aquæ destillatæ 2 ounces.
	Ammoniæ (enough to make a clear solution).

Directions.—To be applied thoroughly in the morning, the hair having been carefully washed and dried the night before, and no preparation put on it.

This dyes the hair black. It is well to experiment in a small way first, dyeing only a hidden strand or two, in order to see whether the effect will be satisfactory. Of course any hair dye must be reapplied occasionally as the hair grows out.

Another way of dyeing hair black is by using 5 or 10 grains of silver nitrate to the ounce of distilled water, applied to the hair only (be careful to keep it off the scalp and the fingers unless rubber gloves are worn) by drawing small strands at a time through a cloth wet with the solution. This may best be done in a dim light, then the hair will darken on exposure to the sun or daylight as it dries. The process may be hastened by applying a solution of sulphuret of potash, ½ dram to 2 drams in the ounce of distilled water, as soon as the first application is dry. A soft tooth-brush makes a good implement for applying these dyes to the hair. Silver nitrate and most other dyes should be kept off the scalp itself.

For dyeing the hair brown Pfaff suggests a pomade composed as follows:

R.—Ol. ovorum rec. press,	
Med. oss. bovis	13 drams.
Ferri lactat	37 grains.
Ol. Cassiæ æther	22 grains.
irections - Apply with soft cloth or tooth-brush.	

Another brown dye is given by Max Joseph:

R	-Cort. fruct. juglandis	2	ounces.
	Gallæ contus	1	ounce.
	Sodii chloratis	1/2	ounce.
	Corticis aurantii	1	ounce.
	Aquæ	3	pints.

Directions.—Boil down to a consistency like jam. Apply with soft tooth-brush.

Sometimes this gives very satisfactory results; sometimes it proves a miserable failure.

Alopecia Prematura, alias Baldness of Young Persons.

—Stiff hats, the bands of which compress the tempral arteries and impair the nutrition of the scalp; lack of fresh air and sunlight; insufficient brushing; wetting the hair when combing or brushing it; the use of poisonous chemicals and proprietary shampoos of various kinds instead of cleanliness for dandruff; lack of scalp exercise (wiggling the ears and contracting the scalp muscles), and sedentary life or indoor occupation are factors of early baldness.

Since dandruff in one form or another almost invariably paves the way for baldness, we had better discuss that feature of the question first.

Dandruff.—Seborrhea, excessive oiliness of the scalp and hair, is as definitely caused by bacterial infection as

is tuberculosis or pneumonia or diphtheria, and, like these infections, it as definitely favored by predisposing factors which lower resistance to infection.

Prof. Lassar, the famous skin specialist, proved experimentally that dandruff could be conveyed by rubbing into the back of a guinea-pig some material obtained from a human being who had dandruff. The guineapig became not only a victim of dandruff but also developed a bald spot. Sabouraud, another eminent authority on the skin and hair, found a microbacillus present in the hair-follicles in cases of dandruff and approaching baldness. This little devil, if we may so signify the pesky microbe, burrows down alongside the hair shaft and, all too soon, destroys the follicle or root, just as surely if not so quickly as does the electric needle. So that is all we shall say about the cause of dandruff, be it mere oiliness or a dry scurf, and its inevitable sequela, falling hair.

Who puts the microbacillus on the scalp? The barber, the hair-dresser, perhaps the roller towel, and, alas! the public comb and brush that hang on chains alongside that busy agent of disease.

Treatment of Dandruff.—By all odds the most effective remedy for dandruff, whether it is simple seborrhea (oiliness) or seborrhea sicca (dry, scaly, or scurvy dandruff), or the medium stage of greasy, cheesy dandruff, is cleanliness. A self-administered shampoo as often as necessary to keep the scalp clean—every day in bad cases, less frequently as the condition improves. Any man or woman too lazy to wash his or her own scalp needs a doctor.

The second remedy is massage of the scalp. This is performed by the individual himself or herself by placing both palms on the scalp and pushing up rools of scalp between the hands as the fingers are shoved together. The entire scalp should be gone over in this manner once a day long enough to produce a sense of warmth and tingling.

Then a thorough brushing is the third remedy. This the scalp should have regularly, dandruff or no dandruff, but must have when dandruff is present if the falling of the hair is to be prevented. A hundred strokes of prevention each day is better than many pounds of alleged "hair restorers" after the hair has grown discouraged.

Fourth is air and sunlight. Leave off the hats and caps whenever possible. A head covering may be necessary in very cold weather and when the summer sun is very strong, but most of the time a head covering is an unhygienic compromise with the dictates of the men's and women's milliners. Fresh air and sunlight, we must always remember, are the best and safest germicides known to science.

Finally, some medicine. It is hard to believe a doctor's advice is worth following unless it is taken with medicine. Among the many scores of local medicaments prescribed by competent dermatologists for individual cases of dandruff we will mention the few we have personal faith in. Sulphur applied locally is the remedy par excellence. Unfortunately, it is insoluble, and must, therefore, be used in the form of an ointment or cream rather than the more elegant solution. Sabouraud himself recommended a lotion composed of precipitated sulphur and alcohol at 90° F., of each 2½ drams, and distilled water and rosewater, equal parts of each, to make the whole measure 4 ounces. This is to be applied at night and washed off or wiped off in the morning. A proprietary sulphur

formula known as Ramsdell's sulphur cream is excellent. Or this combination may be preferable: Salicylic acid, 20 grains; precipitated sulphur, 1 dram; ointment of rose-water, 1 ounce; thoroughly mixed, and applied to scalp between parts of the hair each night in the week, a shampoo being taken once a week or oftener. In the way of liquid preparations which are not greasy is this: Resorcin, 2 drams; ether, 1½ dram; rose-water, 1 ounce; alcohol, enough to make the whole measure 8 ounces. This is to be applied by squirting small amounts on the scalp between parts from an atomizer or dropping it from a medicine-dropper.

The efficacy of any local medicament for dandruff or falling hair depends upon the thoroughness with which it is applied. The proper way is to part the hair and rub in the medicament with the finger-tips, generally covering about one-fourth of the scalp each night. Then, as often as conditions demand, a thorough shampoo must be taken. Sometimes we wonder whether the massage and frequent cleansing are not accountable for most of the benefit. However, it is essential to persevere for a period of about six weeks with regular daily treatment in order to overcome dandruff.

Falling Hair.—Beyond the treatment of the seborrhea or dandruff which ushers in baldness there is little to be added. It may be well to remind the reader that the market groans under a mass of "sure cures" for scalp and hair troubles whose encouraging action is limited to the label. Eau de this and that, all sorts of French toilet preparations, wonderful germicides and nice-smelling nostrums of all descriptions are about as effective as a mild slap on the wrist so far as growing hair goes. At times it may be that internal medication will improve

the hair or postpone baldness, but that is a problem which the personal medical attendant must solve according to the special indications his trained mind may discover in the individual's physical state.

When the hair falls out after severe acute illness it almost invariably returns as heavy as ever in due time after recovery.

Wigs, Switches, Rats, War-paint, and Other Deceits.—We really intended to say conceits, not deceits, but let it go at that. False hair is not only excusable but commendable for an utterly bald person, man or woman. Not because it protects the head from "taking cold"—nay, but because it preserves the dignity. Being bald is a great joke for other people. The victim may put forth a brave pretense of indifference to his pitiable condition, but down deep in his heart he envies the hare-brained fellow with the superfluous mop of hair. And a woman bald is hardly pardonable if she can muster the price of a crown of—in a manner of speaking—glory.

It has been bruited about the country by the esteemed Sunday papers that false hair imported from China and elsewhere carries leprosy and other dreadful diseases. Purely an imagination. The only disease false hair helps to produce is baldness.

For the sake of the personal satisfaction and joy a woman derives from the use of war-paint, this habit, too, is hygienic, provided she selects powders and pigments free from injurious adulterations. In the section on the Eye we have mentioned the sore eye or conjunctivitis sometimes caused by the irritating grains in rice-powder when that excellent accessory is carelessly dusted on. Health boards have had sundry hair dyes and complexion remedies chemically analyzed and not uncommonly

found that these advertised preparations contained such dangerous ingredients as lead, cyanids, wood alcohol, and the like. For instance, flake white, a complexion beautifier, was found to be the cause of chronic leadpoisoning in several cases. Some of the more popular proprietary "hair tonics" contained lead, and a host of the modern prescription fakes extolled by sundry Janes and Marthas masquerading as "beauty specialists" or "skin specialists" in imitation reading matter signed "Adv." are mere mixtures of Epsom salts, alum, and similar worthless substances under parlor car titles. A few of them, offered as alleged freckle removers and destrovers of superfluous hair, have been found to contain caustics, such as mercury. In fact, when a woman sets out to beautify her complexion, destroy her superfluous hairs, moles, or "liver spots," or make her hair curl or "obtain that velvety softness and beauty of skin," she is likely to hurt herself if she believes all she reads in the paper.

The nails, like the hair, are modified skin. It takes about four or five months to grow a finger-nail. severe acute illness an irregular white line across the nail may appear, and an experienced observer can tell by noting the distance this line has grown from the matrix about how long it is since the illness.

The nails atrophy in many skin diseases. Atrophy is shown by white spots in the nails, loss of lustre, furrows, or thinning and cracking. The general health needs attention.

We use our nails comparatively little since we have learned to dwell together in community peace. They come in handy for opening penknives, pinching blackheads, pushing needles through trouser bands, scratching itchy places, and, perchance, defending oneself against a militant sister. Otherwise we could dispense with them, and we are doing so with the toe-nails as fast as evolution will allow. Finger-nails are mostly a nuisance, serving to preserve and propagate microbes under their edges and also furnishing a means of living for manicures. They are a boon to nervous persons who have to have something to chew.

Biting the Nails.—The habit of biting the nails may be overcome by a little practical psychology. Why do people bite their nails? We have it from a distinguished correspondent who prefers to remain anonymous that a ragged or unmanicured nail unconsciously calls for trimming, and quite absent-mindedly the trimming is done with the teeth. Very well. Keep the nails thoroughly manicured, and that will stop the subconscious desire to trim them with the teeth. Simple, when you know how, isn't it?

Inflammation or suppuration at the edge of a nail or the base of a nail may be an acute infection or a chronic eczema, or acquired or hereditary syphilis.

Ringworm of the nail is exceedingly obstinate to treat unless by the aid of autogenous vaccines. In ringworm the nail is raised, thickened, split, and contorted.

"Run-around" is a streptococcus infection. Lightly wrap the finger and nail in gauze soaked with a solution of I ounce of aluminum acetate in IO ounces saturated boric acid solution and cover the dressing with a loose rubber finger-cot. If there is much swelling or evident heading of the pus incision will be necessary.

White marks on the nails are usually caused by airbubbles in the substance of the nail, and they do not indicate or foretell illness.

Ingrowing Nail.—This is caused by pointed shoes and

shoes that do not adhere to the straight inside line. Tight shoes favor the condition. In mild cases the sore skin can be drawn away from contact with the nail by suitably placed strips of Z. O. adhesive plaster, extending around the toe in spiral. If there is granulation tissue ("proud flesh") in the furrow, it must be cut away, burned away, or shrivelled. Powdered alum may be kept in the groove. Severe cases of ingrowing nail require surgical relief. It isn't the nail but the soft tissues beside it that need attention.

Are the Nails Poisonous?—Ancient legends lead to the belief that the nails are poisonous. Of course, the substance of the nails is no more poisonous than skin. Underneath the nails, however, many of us carry swarming cultures of inflammation and pus-producing germs, even though our nails are kept visibly clean. A scratch from the finger-nails is thus risky, and should be at once painted with tincture of iodin in every instance.

CHAPTER X

THE HYGIENIC ANSWER TO THE QUESTION, WHAT SHALL I WEAR?

THE nearest imitation of the hairy coat which we human (so to speak) animals have lost through the softening influence of circulation is, beyond doubt, wool. Silk is a good second, then comes linen, and last cotton.

We wear clothing to keep warm, to keep cool, and to keep dry—most of us do, anyway. Some of us wear it chiefly to keep in style. Those of us who wear clothing for the sake of physical comfort are inclined to wear too much and, in the long run, or, more exactly, in the short walk—that is more lifelike nowadays—to suffer from discomfort. Those of us, without saying specifically which sex, who wear clothing just for the style of it are altogether too prone to wear too little these parlous times. But that is only a moral view. It is extremely doubtful if any one wears too little clothing for good health, and it is a notorious fact that a great many individuals, particularly children, are injured by excessive clothing.

Underclothing.—Before entering into a discussion of the comparative value of different materials and textures of underclothing, we had better talk over a vitally important function of the skin which has been purposely omitted from the chapter on the Skin for consideration here. It is really not so much a function of the skin as a function of the nervous system. But it concerns the subject of clothing in an intimate degree. In order to understand the whys and wherefores of the hygiene of clothing, underclothing especially, one must have some knowledge of the relation that exists between the skin and the general circulation and metabolism.

The Vasomotor Nervous System.—The chief part of the wall of a blood-vessel is the muscular coat, which by contracting constricts the lumen and narrows the caliber of the artery, and by relaxing permits the artery to dilate and give freer passage to the blood. All over the body, with the probable exception of the brain itself, the arterial muscle is richly supplied with vasomotor nerves, the name "vasomotor" implying control of the caliber of the vessels.

The vasomotor nervous system is part of the great sympathetic nervous system which presides over the vital body functions, such as sleep, digestion, secretion, and circulation. Two vasomotor centers in the brain receive sensory impulses from the various organs and the skin and reflect them outward as motor impulses. Thus, the local and general circulation is altered under varying conditions. It is only by virtue of an alert, responsive vasomotor system that we can be comfortable under rapidly changing atmospheric conditions. A sudden plunge from the climate of California to that of Winnipeg, or vice versa, would seem quite a strain on one's health if it were only an occasional performance; but when it happens many times a day, as it does with most of us through the winter, then it is indeed a lucky thing that we have a competent vasomotor apparatus to adjust the circulation and metabolism to the extraordinary variations of indoor and outdoor atmosphere. Imagine swimming about in a tank at a temperature of, say, 3 degrees above freezing for an hour, then jumping

into one at 70° or 75° F. for a few hours, back into the cold tank fifteen minutes, again into the warm one four hours, etc., day after day—imagine that, and you have a fair conception of the strenuous life of the civilized human biped. With feathers like a duck or fur like a seal or polar bear we could stand it readily, but we have shed our hairy coat and must muddle along with only a fair imitation in the shape of underclothes to protect our tender skin.

Wool, Silk, Linen, or Cotton?—There is little agreement among hygienists as to the choice of materials for underclothing. All four textiles have their good and bad points, and each is advocated by good physicians upon more or less logical grounds. Each is urged by its exponents as the only hygienic wear. The writer, for instance, has always favored woolen, not flannel, but porous, knitted woolen underwear and either woolen or silk stockings for the eight colder months of the year in the middle Atlantic States. Yet he must admit that a great many individuals remain strong and well, and quite independent of physicians, either because or in spite of the fact that they wear cotton underwear the year round.

The reasons for supporting porous, knitted woolen underwear are: (a) Wool is a slow conductor of heat, thus tending to equalize the surface conditions incident to the sudden plunges from cold street air to warm shop, office, theater, or house atmosphere, and vice versa; (b) wool does not absorb perspiration like cotton, but if knitted and porous, unlike the old flannels, permits ready evaporation through the meshes and interstices of the cloth, like linen; (c) wool does not feel clammy when the skin perspires freely, as does cotton, linen, and silk.

Cotton is a rapid conductor of heat, and so favors sud-

den chilling of the surface. Cotton underwear necessitates some very difficult acrobatic performances on the part of the vasomotor nervous system. Wool, we think, saves this overworked portion of the nervous system a great deal of energy. In hospital and private practice we have noted one suggestive thing—suggestive to our mind, at any rate. Thick cotton plus a "chest protector," and particularly what is known as "fleece-lined" cotton underclothing, seems remarkably popular with those who have pneumonia, bronchitis, and frequent minor respiratory infections. We consider cotton the doctor's friend—it brings him much "business."

For students, clerks, office people, factory workers, and all whose occupation is indoors in heated atmosphere in winter time we think light-weight or medium-weight knitted wool the ideal artificial coat of armor. For those mostly engaged outdoors heavy wool is better. unfamiliar with modern textiles are apt to think wool very irritating to the skin and too warm for comfort. not true. Fine woolen undergarments today do not irritate or itch; if one's skin is very sensitive woolen wear with a silk lining solves the difficulty with absolute satisfaction. Women often object to woolen underwear because they think it will be too thick and bulky and detract from the good appearance of the figure. very light-weight woolen underwear is no more bulky than gauze or cotton or silk. Women normal in weight or overweight need only the lightest-weight underwear, being pretty well protected against sudden plunges by their rich layer of subcutaneous fat.

For summer wear either linen or cotton is suitable. It is of little importance from the hygienic viewpoint, in our opinion, which the individual considers more

comfortable, or whether he prefers to go without underwear. There is just one popular misconception fostered by commercialism, and that is the idea that underwear full of little holes is cooler than ordinary knitted wear. It may be for the first few moments it is worn, not afterward.

The Feet.—The importance of treating the feet as well as the general skin surface must be self-evident to any thinking person, yet how many of us carefully adopt a hygienic quality of underwear and go on wearing the same sheer hose we have worn in the summer? It is true that most woolen or cashmere hose is somewhat thicker than silk or cotton, but common sense must be willing to make some little sacrifices of style. Especially persons afflicted with cold feet or sweating feet must wear woolen stockings. We will admit, however, that the common notion that warm feet determine general warmth is the reverse of the physiologic truth; the fact of the matter is, that a good general circulation keeps the feet warm, although the reflex vasomotor nerve influence of local applications of heat or cold to the feet is too well known to need mentioning.

Coddling.—If space would permit dealing with the subject of coddling at the length it deserves, as an important factor of respiratory disease, an entire chapter might be devoted to it. Coddling means wearing such dangerous contrivances of ignorance as "chest protectors," throat mufflers, belly bands, extra layers of flannel (preferably red in color and redolent of the drugstore) on "weak" spots, rubber overshoes when it isn't necessary, heavy wraps that personal comfort does not call for, and any excessive clothing that you are afraid to leave off when it becomes burdensome because you fear you will

"take cold." Coddling arises from the fear of "taking cold"; we are outgrowing the habit just as fast as we are outgrowing the delusion of "taking cold." Young people nowadays do little coddling unless driven to it, as a man to drink, by the relentless persecution of their old-fashioned and self-styled "common-sense" elders. John simply has to have his throat "protected" and wear his rubbers even when the ground is dry, and Mary gets it from all sides when she ventures to put on her shamefully low-neck dress to wear to work in the winter time, if the psychic grandmothers have anything to say about it. Babies, children, and youths suffer most from coddling which is thrust upon them wily-nily by guardians afraid of a draft or a change of weather, but not noticeably fearful of the spray of a sneeze or the shower of a cough.

Coddling injures the health by benumbing or weakening the vasomotor nerves of the part coddled. The more vou coddle, the more disease vou will have to coddle. works in a vicious circle. A coddled old granny, male or female, sixty, forty, or twenty years old, is indeed a pitiable object to behold, sensitive to the slightest draft, trembling at every change of weather, shivering if the thermometer falls 5 degrees; a walking barometer, a selfmade ascetic. Young people, be not slaves to tradition! Rise and be free! Wear what you want when you want it, not what some one tells you you need to prevent illness! There is one great law to guide you, a law you may rely upon under every circumstance: That which gives you physical comfort is hygienic to wear. low neck, or low shoes, or thin underwear feels perfectly comfortable under the conditions of your life, then don't change it. The less we wear and remain comfortable the better for our health. If you want to leave off your coat or your heavy underwear today, for the sake of comfort, and not for style or because it is spring at last or because the others girls and fellows are doing so, leave it off though you are haled into court to explain your behavior. That is the writer's personal opinion, and in this matter, at any rate, he "takes his own medicine" with only the happiest consequences.

Protection Against Heat.—In very hot weather or in the tropics it is pretty well agreed that linen and cotton are the textiles best suited to protect the body against heat. Orange-colored underwear is advocated by experts who have studied the problem thoroughly, and white or very light colors are preferable for the outer clothing, because white reflects instead of absorbing heat rays to a considerable degree. Darker colors or black would be warmer for winter wear. If a dark cloth and a light cloth of the same texture be laid upon the snow it will be found that the snow melts more rapidly under the dark than under the light cloth. Hence the black hat invites sunstroke in hot weather and the white or light colored lid frightens it off.

Protection Against Dampness.—The modern waterproofed cloths which permit ventilation, and yet shed water quite as well as mackintosh or rubber garments, are preferable for raincoats, but for protection against wind the rubber or mackintosh coat is better, provided the occupation does not cause excessive perspiration.

The Outer Clothing.—Properly dressed with underclothes, including stockings, one may suit one's own taste about the outer clothing—wool, silk, linen, or cotton. The wearing of furs merely to conform to fashion is unhygienic when the furs are not needed to keep one warm. Under any circumstances the throat and chest should have no more clothing than the rest of the body. Overcoats may be worn or left off at will. That is what they are for—emergency wear. The less clothing we can wear and remain comfortable the healthier we will be.

Hats.—A hat worn when it is not needed to protect the head from extremes of temperature is unhygienic, tending to cause dandruff and baldness. Hard-banded hats are always objectionable for the same reason. Unventilated hats too. Women's headgear is generally unobjectionable except as regards price, which we think is something fierce nowadays! Women rarely grow bald; Indians never. Dark colored hats are better for winter, light colored hats for summer. A red or orange-colored lining in the straw or cloth hat keeps the head cooler, as was determined by wearing a thermometer under the hat.

Corsets.—In the grand old Elizabethan era women screwed their waists down close to the vanishing point by means of corsets. It was about then that the custom of "molding" the figure originated, and young girls have been put in corsets with some vague purpose up to the present day. We have discussed the question with many mothers, and almost invariably they think it is essential to put corsets or restraining appliances of one kind or another on daughters at fifteen or sixteen. Why? Well, it is difficult to say, but you know it is the custom, like cramping the feet in China or ringing the nose in Timbucktoo, and besides a mother wants to assist her daughter in developing a good figure!

There is no fixed opinion among women as to what constitutes a perfect figure, we fancy. Few women, with the exception of actresses and athletes, are content to

possess a figure closely approximating that of the Venus de Milo. The Venus would be all right if her waist were a little smaller, the corset-makers would have the women believe.

While the corset does constrict the waist and abdomen and hips at first, if worn habitually, even very looseand when did a woman ever admit that her corset was tight?—it inevitably tends to make the waist, abdomen, and hips large and flabby. How do we know that? We know that such is the tendency in most women after the age of thirty, and we know that it is more or less physiologic for an excessive amount of adipose tissue to be deposited in and about muscles which are not used. The corset splints or puts at rest these muscles which ought to be well-developed to support the body and keep the figure lithe and slender. The corset, therefore, may be considered the chief factor of lost figures in women beyond thirty. True, mere man is also inclined to manage a corporation after thirty, but rarely indeed does he exhibit the complete success which his general manager attains.

Fortunately for the health of the future race and for the appearance of the women of tomorrow, the belief is gaining currency among intelligent mothers that a corsetless figure is to be developed by raising a daughter without the injury of corsets. Athletics has helped to promulgate this newer custom, and today, we are glad to say, even fashion is favoring the corsetless figure, in imitation at any rate. The ideal figure at present for which all women, thick and thin, good and bad, are striving is the girlish, unspoiled, natural figure.

Corsets, interfering with natural abdominal breathing, are bad for the voice of a singer, and certainly injurious to the pelvic organs. Indeed, it is probable that most cases of functional suffering in young women may be attributed to the injury done by corsets. We have touched upon this in referring to Dr. Clelia D. Mosher's valuable contribution to the treatment of dysmenorrhea in Chapter VIII.

Abdominal Supporters.—It is frequently helpful to wear a suitable supporter or corset which may be prescribed by the physician for particular cases. Loose or floating kidney, or sagging stomach or bowel (ptosis), or hernia (rupture), or the weakness of the abdominal wall after an operation, or pelvic displacements may require such support. If so, the attending physician should determine just what form of support is needed.

Belts.—Gentlemen wear belts with negligée attire to look pretty. Men wear belts to hold up their trousers. Slim, long-waisted fellows, built almost like the attenuated freaks in the gentlemen's fashion plates, may wear belts with immunity, but full-sized men inclined to corpulency must rely upon some good brand of suspenders to keep them well dressed unless they wish to become still more corpulent.

Even women and girls should endeavor to support the skirts by shoulder-straps or other means, and not by hanging them on the waist. The present corsetless-figure fashion favors suspenders for women.

Garters gripping the legs favor the formation of varicose or enlarged veins. Garters supported from attachment to the corset are likewise objectionable. The better way is to attach the garters to the garment or suspenders taking support from the shoulders. For men, or for women who affect socks, wide elastic garters are best.

Shoes.—Bunions, corns, ingrowing nails, pronated, weak or flat feet, Morton's neuralgia, and other affections of the foot are caused by faulty shoes.

It is curious how determined the shoe manufacturers are that the normal shape of the foot shall be ignored in the designing of shoes. It is not so much to be wondered at that women should desire to cramp and contort their feet, for women will gladly suffer anything to be in style. But when men meekly submit to the freaks of fashion which mean subsequent distress and trouble for the feet it is remarkable, in view of the boasted independence of the stronger sex. It is a saddening spectacle, a man wearing narrow-pointed toes, pretty cloth uppers, high heels, and the dearest silken bows in the world. It is really pitiable to realize that later on he will pay for this vanity with foot misery, but perhaps it is only just. The poor, silly woman, whose duty it is to make herself as attractive as possible in the eyes of the brute, is pardonable for her vanity. Still, we think, it is quite possible for a woman to wear neat, attractive-looking shoes and still not ruin her feet.

A footprint of the wet foot on the floor shows that the broadest part of the foot, if it is not deformed by bad shoes, is across the level of the great toe joint—the bunion joint. The narrowest part is the heel. If the footprint is exactly bisected by lines running from the middle of the outline of the toes and the middle of the outline of the heel, these bisecting lines will meet in the center of the footprint at an angle which bends inward; that is to say, the normal foot bows inward toward its fellow, not outward, as the shoemakers would have it.

The shape of the shoes must conform reasonably well to the shape of the foot. Here are the important features

in a hygienic view of shoes: (a) The sole must be as wide as the width of the naked footprint under the weight of the body. (b) When the shoes are placed side by side the tips of the toes should be little if at all separated. If the toes of the shoes veer widely apart when the heels and soles are touching each other, the shoes will put a strain on the transverse arch, favor the formation of bunion, and make the wearer toe out, which tends to weaken the longitudinal arch and bring on weakness or flattening of the foot. (c) The heel of the shoe should be at least 2 inches wide (we have never found an adult whose heel was less than 2 inches wide), and it should come reasonably well forward under the shank of the foot to give firm support, and that means it must be at least 2½ inches long. (d) The heel of a woman's shoe may be 2 inches high, no higher. The heel of a man's shoe may be 1 inch high. A 1-inch heel is better for every adult. (e) The shank should be fairly flexible, but the counter should not be high or stiff for a normal foot. (f) The sole should be rounded, never pointed at the toe. and the box toe is better than the flat toe.

As for the upper, it is a matter of choice if the feet are normal, and a matter of good judgment for the physician if they are not. Generally the less upper the better. Low shoes are ideal in any weather.

Children's shoes should be snug, but not tight. The toes should be wide and rounded, not square, nor too long. Spring heels should be worn up to the ninth year by boys and up to the fourteenth or fifteenth year by girls. There must be no tight band or constriction over the instep.

Rubber Heels.—Because of the noiselessness of rubber heels, and because of their good wearing quality

as compared with leather heels, we recommend them for all. But that they can save "jars on the spine" or have any particular hygienic influence on the body we firmly deny.

Shoulder Braces, Arch Props, Suspensories, Electric Belts, Chest Protectors, Abdominal Binders, Trusses.— The first three named appliances are capable of doing more harm than good and, therefore, should never be worn without competent medical advice. Electric belts should never be worn even with medical advice, because no one but a downright charlatan would advise a patient to wear such a piece of flub-dub. Chest protectors are chest weakeners and can only invite trouble. The flannel of the protector might better be used to stuff a little billiken to set up on the mantle to ward off "colds and coughs."

The abdominal binder worn by the baby had better be discarded as soon as the navel requires no further dressing. The baby will be more comfortable, digest his food better, and be less predisposed to hernia or rupture if the binder is removed. Of course, a baby's belly needs no more warmth than his feet or his neck, and he is in no sense protected from illness by the binder.

Trusses are mostly made to sell. Everywhere you will find self-styled "truss experts" who give "free examination" and always have the only proper means of "curing" rupture. Some of them knock other makers' trusses; some knock trusses in toto, and sell you—if you are one of the "easy" people—about two cents' worth of adhesive plaster under a fancy name and at a still more fancy price. If a man or woman or child has a hernia (rupture) which, for some individual reason, cannot be surgically cured, as all hernias should be, then a truss should be

selected by the family doctor to meet the conditions in the individual case. The doctor knows the anatomy. physiology, and pathology of hernia; the truss expert or truss manufacturer doesn't, but the latter makes up for this vital shortcoming by knowing how to handle a prospect! We have repeatedly known "truss experts" to fit a crude appliance on such a serious condition as a strangulater hernia, thus hastening the victim to his grave. Every doctor must see instances in which some self-made "rupture specialist" has unloaded one of his extravagant toys on a poor victim who had not a hernia at all, but a hydrocele or varicocele or some equally unmechanical condition resembling hernia. Hernia in child or adult is too serious to be entrusted to the bungling hands of a The family doctor is the one to consult. mechanic.

CHAPTER XI

DIGESTION, METABOLISM, AND NUTRITION

Somewhere between the extremes of fletcherism and the habitual haste of most busy Americans in eating lies the safe medium of thorough mastication. Digestion, like a great many functional and organic diseases, begins at the teeth. One with a sound equipment of masticating machinery is likely to retain good general health and to be blissfully unconscious of his digestive process. In the opening chapter of this volume the importance of bad teeth and inflamed gums was dwelt upon and need not be further discussed here.

The one unanswerable argument on the side of fletcherism is Fletcher himself. Rejected as physically defective when he applied for life insurance, this famous man adopted measures which, in his own judgment, might remove the cause of his rejection. He reduced the daily intake of food considerably below what is generally deemed the minimum quantity necessary for the maintenance of a well-balanced metabolism, and started masticating each morsel until it no longer could be tasted and had to be swallowed. This habit he kept up indefinitely. At the age of fifty-nine, though not in training, he underwent tests of endurance at Yale and surprised all the experts by lifting the dynamometer 150 times, as against the 75 times considered an exceptional performance for even an athlete in training. The physical director declared that Fletcher's hand was so steady at

the conclusion of this remarkable endurance test that he held a glass of water brimful without spilling any. Nothing of the kind had ever been heard of, especially in a man nearly sixty years of age. The practice of fletcherism, then, rather than the theoretic weighing of the subject, is the proof of the pudding.

Appetite.—There is much speculation and knowledge of the nature of appetite and hunger. an instinct, a reflex, a habit, or a function? Perhaps the most recent view is that appetite or hunger depends upon the activity of "hormones" or chemical messengers. A hormone is some substance elaborated by certain cells. say those in the tongue or the salivary glands, and carried in the blood to other cells, say those in certain of the secreting glands of the stomach, where the hormone initiates the secretion of the particular digestive juice called for. Thus, "bread-juice" is quite unlike "meatjuice," and "meat-juice" is unlike "milk-juice," but the first and the last named are more closely akin, hence bread and milk or meat and bread go well together, but meat and milk make an undesirable, unappetizing combination. This is only one example of many of the hormone actions which influence appetite and digestion as well as other important functions of the body, but it will suffice to show that appetite and hunger are finely adjusted in the general working scheme of metabolism.

Speaking of metabolism, what is metabolism? It is the name given to the oxidation process or consumption of food in the body, the burning of fuel to feed the human machinery. Metabolism is largely under the control of certain hormones or chemical messengers known as internal secretions, substances passed into the blood by the ductless glands (pituitary gland at the base of the brain, thyroid and thymus in the neck, the spleen in the abdomen, the suprarenal glands capping the kidneys, perhaps also internal secretion from male and female sex glands, bone-marrow, pancreas, and lymph-nodes). But the activity of these ductless glands or their internal secretions is dependent on and in large measure controlled by diet, atmospheric conditions, emotions, and drugs. In fact, the most satisfactory explanation for the specific way in which a certain drug or emotion or diet affects metabolism is perhaps to be had in a consideration of the influence of such factor on internal secretions.

Appetite is a bad thing to monkey with. If one's metabolism is under some strain the appetite may be for a time inhibited or lacking. It is doubtful whether it would be beneficial to stimulate the appetite under such a condition by means of medicines, condiments, or coaxing. Of course, this may be a matter for decision by the doctor in an individual case, but we are sure people too readily resort to artificial "appetizers" without reason, or with actual physiologic objections to such practice ignored. For instance, a well-nourished, rather too well-nourished patient consults his doctor. His chief and practically sole complaint is loss of appetite. There is apparently nothing the matter with him except that he cannot stow away the customary thresherman's meal three times a day as he has done for years. Here kind nature is endeavoring to keep the man from digging his grave with his teeth, but he is obsessed with the ever popular idea that one is in danger unless one gets away with three square meals a day, and if the doctor doesn't see fit to waive common sense and prescribe a bitter tonic the gentleman will go round the corner and order up a case of somebody's ale, or perhaps stop at the drugstore and purchase a bottle of Old Doctor Liverall's Surefire Appetone for the Blood, Bowels, Liver, Kidneys, and Any Other Organs You May Have Doubts Of.

Condiments.—The habit of seasoning food with condiments goes hand in hand with our national intemperance in eating. Fear of fasting is probably the most prolific single factor of minor and major maladies doctors have to contend with today. People invariably become alarmed if they fail to muster an appetite for a square meal when the clock points at mealtime. Hostesses betray symptoms of acute distress if guests do not do full justice to the viands placed before them. Families become panicky when father skips a meal in behalf of his stomach. Even doctors—the type that is fortunately passing—make the appetite the principal point of discussion after the tongue has been inspected and the bowels thoughtfully regarded, the appetite being a thing you can examine thoroughly without stirring from your comfortable swivel-chair.

Habit is quite as fundamental a factor in the development of food intemperance and all the protean symptoms of auto-intoxication or toxemia as it is in the development of alcoholism or tobaccoism or morphinism. One can acquire or overcome an appetite for too much food just as one can learn to drink or use dope. Dr. Osler—who, by the way, never advocated the foolish thing dubbed "Oslerism"—is one of the world's authorities in medicine. In discussing Bright's disease he expresses the opinion that overeating is the chief cause of the arterial strain which is the real pathologic condition in Bright's disease. But since Shakespeare let loose that favorite axiom of the menu card, "Good digestion waits on

appetite," the whole world of big eaters stuffs itself without mercy right up to the final stroke of apoplexy.

Dyspepsia, Indigestion, and Digestive Ferments.-The term "dyspepsia" means difficult digestion. It is symptomatic in a large number of diseases other than stomach disorders. To say one has dyspepsia is not telling what is the matter any more than to say one has pain or fever or loss of strength. Yet there are countless numbers of alleged "dyspepsia remedies" sold to the uneducated classes, and, as for "digestive tablets," even doctors are sometimes persuaded by the traveling drug salesman to dispense or prescribe them. For instance, there is a tablet consisting of charcoal, soda, wintergreen, and, its makers allege, papain (a ferment). Through sustained advertising and generous free samples distributed to doctors the tablet has enjoyed a big sale as a remedy for "indigestion." The secret of the exceptional instances in which temporary relief follows a dose of this worthless nostrum lies in the fact that it is given in hot water, and that it contains enough soda to neutralize acids which often cause pain or distress regardless of the nature of the disturbance under treatment. As far as "digesting food" is concerned, this tablet, like all other shotgun remedies, is utterly useless, but the free samples, the advertising, and the drug detail man combine to keep the diffident doctor prescribing the tablets.

Of course, it is possible to partially digest food outside of the body by the aid of pepsin and an acid medium or pancreatin and an alkaline medium resembling the physiologic conditions in the stomach or bowel. Thus "peptonized milk," used in feeding the sick, is partially digested milk, the agent employed being a mixture of pancreatin (obtained from the pancreas or sweetbread of animals) and soda, acting for a certain time upon the milk at a temperature equal to normal body temperature. But unless chemical analysis has demonstrated the absence of pepsin from the gastric juice, it is the merest guesswork taking pepsin as a remedy for any stomach trouble. Indeed, pepsin is about the last thing wanting in a diseased stomach. We doubt whether any beneficial effect is ever obtained from the use of pepsin as a remedy. The nostrum advertisement which dwells upon "digesting your food" is simply a piece of chicanery playing upon the gullibility of the public, and the acme of asininity in this line is "pepsin gum," which, if it contains enough pepsin to digest a few grains of food, could not perform the task in the mouth anyway unless the mouth were very acid.

"Indigestion" is one of the meaningless names that cover sundry pathologic conditions. Gall-stones, chronic appendicitis, ulcer of the stomach or duodenum, adhesions from former inflammatory conditions in the abdomen, ptosis or sagging, and kinking of the food canal. and many other conditions masquerade as "indigestion." Attacks following the eating of some particular article of food are often symptomatic of a diseased gall-sac or gall-stones. It is not unreasonable to think that overindulgence in hearty or unsuitable food may produce some distress for a time, but it is unreasonable to attribute severe pain in the abdomen to mere "indigestion," because the ultimate medical history generally proves that such painful attacks were in reality not caused by a mere error of diet.

Factors of Stomach Trouble.—Overeating, hasty eating, eating irregularly, eating improper articles, eating too highly seasoned food, eating to please a hostess, eating

to prove an appetite, eating just because it is mealtime although one is not hungry, and eating the tough flour which some housewives use (if we may judge by the tenacity of the biscuit!) are causes of stomach trouble. But many cases of stomach trouble, or chronic gastritis, or "catarrh of the stomach" are caused by alcohol; the most obstinate cases are, at any rate.

Factors outside of the stomach or the food are even more frequently active than those already named. The onset of pulmonary tuberculosis is sometimes marked by stomach trouble rather than symptoms pointing to the lungs. Bright's disease is usually accompanied by digestive disturbances which may be present for a long time before the condition of the kidneys is suspected. Pain in the pit of the stomach is almost as characteristic of angina pectoris as is pain in or near the heart itself, and a valvular heart defect is usually accompanied by more or less stomach trouble. Lightning pains or band-like sensations about the stomach are commonly noted in locomotor ataxia. "Stomachache" in children sometimes means Pott's disease of the spine. Pain caused by appendicitis is usually felt over the stomach at first, and gall-stone disease, especially in stout women past thirtyfive, is a notorious cause of "gastritis" or "acute indigestion,"-indeed, there may never be any other symptoms.

Gas.—When food remains longer than normal in any part of the food canal the bacteria which normally inhabit the canal decompose the food, and one of the byproducts of bacterial action is gas. Another by-product is acid. The gas, if formed in large quantities, may give a feeling of fulness or distress or cause actual bloating; but it is our personal opinion, not shared by many physicians, that the gas thus formed does not cause severe pain

under any circumstances. The acids produced by fermentation (butyric acid, acetic acid, lactic acid) do sometimes cause considerable pain. The physiologic hydrochloric or muriatic acid secreted in the gastric juice when excessive in quantity does undoubtedly cause burning, gnawing, or boring pain until neutralized or removed. Personally we believe that in all conditions in which pain is present with an accumulation of gas, other factors than the gas itself produce the pain, if there is pain. Large quantities of gas may be formed in the stomach or bowel without any painful sensations whatever.

Swallowing Air, "Cribbing."—Persons of a nervous disposition, or persons emotionally excited, sometimes unconsciously swallow large amounts of air, then belch it up with much noise and more or less temporary relief. Closely watched, such a person will be seen to stretch the neck forward, the Adam's apple rises and seizes upon the gulp of air, and the patient swallows it. This is repeated every few seconds until a good big stomachful is swallowed. Then there is a veritable explosion, and everybody marvels at the tremendous quantity of "gas"—everybody except the doctor, perhaps. If such a patient will hold a cork between the teeth to keep the mouth open air-swallowing will be rendered practically impossible and the "attack" will soon pass away. We ask pardon for stating here that the word "gastritis" does not mean "gas" pain or anything concerning gas, as many people imagine: it means stomach inflammation (gastrum being Latin for stomach and the suffix meaning inflammation).

Flatulency is the name given to gas or, rather, excess of gas in the bowel. Of course, a certain quantity of gas is normal and necessary in the stomach and bowel, aiding in the peristaltic or onward movement of the food. But

when present in excess and causing discomfort it is rereferred to as flatulency. It is generally a mere consequence of overeating, and while various carminatives and
irritants in the form of medicine will stimulate the bowel
muscle to drive along the gas, how much more sensible
it would be to reduce the amount of food taken and increase the time given to masticating it. In fact, it may
be set down as a rule, of course not applicable in the case
of a really ill person, that diminution in the intake of
food and a little more careful mastication will bring relief
to "dyspepsia" and "indigestion" much more certainly
than will pills, salts, tonics, and "digestive" tablets. Yes,
and more certainly than will "easily digested foods."

Dieting.—What doctors believed and practised in the way of dietetics fifteen or twenty years ago, and that means what the laity believes and practices today, is as obsolete as the horse-drawn street-car today. It was formerly the custom to lay down a specific diet for each patient, allowing this and interdicting that article, according to the doctor's personal experiences or the experiences of his patients with similar ailments. If the patient had flatulency starch was seized upon as the thing to prohibit; if the patient had joint disease red meat was cut off the diet because of some "uric acid" theory which has been found untenable. In short, the older scheme of dieting was based largely upon conjecture and empiricism. But chemical and physiologic researches have brought some order in the chaotic practice of dietetics. Diet is now determined intelligently, according to the patient's condition, its applicability gaged by laboratory and other accurate tests, its quantity based upon the patient's caloric requirements, its character depending upon the particular fault in the

patient's metabolism. We have much yet to learn about nutrition, but progress in this field of study has been so rapid in recent years that much of the dietetics of a decade ago is no longer practised. For instance, it is now known that meat, red or white (there is really no appreciable difference), has no more to do with joint diseases than other kinds of food. Solid foods may be as easily digestible, even safer foods, than milk or soups in typhoid fever or certain intestinal diseases. Meat-juice or meatbroth is so low in food value, although stimulating and appetizing, that if fed upon it exclusively a dog will starve in a shorter time than he would if fed nothing at all—a paradox, but quite true. Water taken at mealtime or just before mealtime instead of interfering with digestion improves digestion. In most cases of digestive trouble meat in small pieces digests more easily than meat-broth. These are random ideas, all scientifically established, showing how different modern dietetics is from that of a generation ago.

A familiar citation will perhaps suffice to convince the reader that popular dietetic fancies are not always well founded. Two brothers had typhoid fever at the same time, but in different homes. Two doctors attended, the one doctor being conventional, elderly, experienced, and, in general, a successful practitioner, as the world looks upon success in practice; the other brother had a very young doctor, comparatively inexperienced (though an ex-intern), with but a small practice and no great personal standing in his newly adopted town. The old doctor permitted his patient nothing but milk, some clear broth, and fruit juices. The young doctor, to the consternation of the "old women," permitted his patient bean soup, various kinds of soft puddings, and, horrors upon horrors,

scraped beef on toast. Well, naturally, one of the brothers had a perforation (typhoid ulcer broke through the bowel wall) which brought death in a few hours. The other brother, though apparently the worse of the two, ran a short course and made a rapid convalescence, being up and out walking just six weeks after he had taken to bed. The old doctor's patient died. What caused the perforation? Milk. A long, dense, gristly curd of milk pushed its way through the intestinal wall at the situation of the ulcer. That is a thing scraped beef has never been known to do, but heaven only knows how often it has happened to the patient on a strict milk diet! The moral of this incident is that that ideal food, milk, although a harmless looking liquid, does not necessarily remain a liquid in the bowel, as many a young mother has learned to her dismay. Too many typhoid fever patients have been literally starved to death, or so weakened by inadequate feeding that they were unable to keep up the fight to the finish—but we are not discussing typhoid fever now.

The Test-meal and the Stomach-tube.—In any obstinate or serious case of stomach trouble it is necessary, as a rule, to employ a test-meal and an hour or two later the stomach-tube in order to obtain some gastric juice and analyze it. Indeed, in the majority of cases this expedient alone will suffice to determine the diagnosis, as between chronic gastritis, dilated stomach, ulcer of the stomach, cancer of the stomach. The test-meal is a simple meal of bread and water, or perhaps a little scraped beef, bread, and weak tea without sugar, or in some cases just a glass of cold water (which stimulates free flow of gastric juice about as well as food). The stomach is emptied about an hour later by means of the stomach-

tube, or stomach "pump," as the newspapers like to call it when describing a case of poisoning. This simple instrument is nothing but a soft-rubber tube, perhaps 30 or more inches long and the diameter of a large fountain pen; it may or may not have a simple bulb in the middle of the tube and a funnel at the upper end. While by no means a pleasant experience, still it is not a painful ordeal to have the stomach-tube used, although patients almost invariably become panicky when it is proposed in private practice. The tube is simply inserted in the mouth and the patient swallows, and down it goes, like one very long soft capsule. The stomach contents are then siphoned out. If desired, the stomach may be washed by allowing quantities of warm water or alkaline or antiseptic solutions to flow in and out through the tube. Really it sounds worse than it feels. The marked relief obtained by the expedient of stomach washing repays the patient for the effort many times over.

Acid in Stomach.—In health about 2 parts in 1000 of the gastric juice in the digesting stomach consists of hydrochloric or "muriatic" acid. This may be decreased or absent in certain diseases, like chronic gastritis, dilated stomach, or cancer; or increased in certain nervous conditions, as a reflex result of irritation elsewhere, as in gall-stones, chronic appendicitis, adhesions, and very commonly in gastric or duodenal ulcer.

But other acids are found in the diseased stomach. If food is not digested or passed along into the bowel in the normal time it undergoes fermentation by bacteria and yeast cells, which are always present in the stomach or are introduced with the food. Fermentation produces lactic, butyric, and acetic acids as well as certain gases. These acids of fermentation are as likely to cause distress

as is an excess of hydrochloric acid, but in any case it is indispensable to know what type of "acidity" may be present before effective treatment can be found, be it dietetic, medicinal, or surgical. Hence the habit of resorting to such makeshifts as soda, saleratus, magnesia, and other alkalies to relieve "acidity" is not only wrong in principle, but entirely futile in the long run, because if the acidity is an excess of hydrochloric acid such alkalies are apt to stimulate still more excessive secretion, and if it is excess of fermentation such alkalies can hardly stop or relieve the fermentation. Of course, a patient in distress may obtain some relief in this way, but he should never depend upon such remedies very long. If the physician once determines in the scientific way what the nature of the acidity may be, he can at least bring about marked improvement by means of diet and other measures, even though the causative factor is not to be removed by medical means.

Effervescence and Gas.—A dose of sodium bicarbonate (soda, saleratus) is usually followed by more or less belching of gas if there is either an excess of hydrochloric acid or the acids of fermentation in the stomach, and the same applies to seidlitz powders (one paper contains soda and Rochelle salts, the other contains tartaric acid) and to a great many effervescing combinations taken by persons with "stomach and liver complaint." Most of the gas belched under these circumstances is produced by the soda in its decomposition by acid and not by the stomach. However, the mechanical irritation of the stomach by effervescence does tend to stimulate eructation of gas, and some of us certainly derive a lot of gratification from the mere act of belching gas, although we introduce the gas in the medicine!

Bismuth and the Stomach.—Because doctors sometimes prescribe salts of bismuth in certain diseases of the digestive organs there is a popular delusion that bismuth is good for most everything, and it is taken in minute quantities without any regard for its effects. If bismuth does any good in medical hands it has to be given in large doses—doses fifty or a hundred times larger than the dose usually present in popular nostrums. Its action is purely mechanical, a protective, a coat of armor over an inflamed or ulcerated surface. But it is capable of producing as much harm as good—or rather more harm, as popularly employed—because bismuth-poisoning is by no means an unknown accident.

Passing Around Prescriptions.—This is as good a place as any to speak of a habit which leads to a great deal of dissatisfaction—the loaning or exchanging of prescriptions. A doctor or specialist writes a prescription for a patient. The patient takes the medicine, along with the special diet or other treatment prescribed by the doctor, and improves. A year or so later a friend develops "similar symptoms"—and you can imagine what that means in the case of so deceptive a things as "stomach trouble"—and the original patient constitutes himself a committee for the rescue of mankind. He prevails upon the friend to "try" the wonderful prescription, and gives him a copy. Well, the friend tries it, if he can obtain it and presently the friendship begins to cool. Some people are mighty ungrateful for these small favors, especially when they feel worse after taking.

An old fable tells how a doctor announced that his patient, the village blacksmith, could not live another twenty-four hours. The blacksmith had stomach trouble. Informed of his approaching end, he pleaded for just one

favor—would the dear doctor allow him one big plate of pork and beans? Certainly. The man was about to die anyway and he might as well have this strange wish granted. He ate the pork and beans with considerable relish, having been limited to broths for some time. In the morning the doctor arrived at the house to sympathize with the bereaved family, and was startled to learn that the blacksmith had returned to his forge as well as ever. "Pork and beans," the doctor entered in his record book, "saved the blacksmith when he was about to die with stomach complaint."

A little later the village tailor, a wizened, frail little man with great faith in his physician, came down with a severe case of stomach trouble. The doctor tried all reputed remedies to no avail. At last it became evident that the tailor was sinking—at any rate he was yelling louder than before. So the doctor had a large plate of pork and beans prepared and fed them to the protesting patient with the assurance of experience. Now, said the doctor to the tailor's wife, let him rest in peace. Tomorrow he will be back at his bench as good as ever. But in the morning, after a night of terror, the tailor breathed his last. Then the doctor entered another note in his record book, "What cures the blacksmith kills the tailor."

In copying prescriptions lay persons are very apt to make serious errors. In the first place, the doctor's handwriting is notoriously cryptic, his abbreviations and Latin something dreadful even to the trained pharmacist, and his cabalistic signs often very difficult for any one but an experienced pharmacist to interpret aright. Even those of us who imagine we write clearly and take pains to avoid all abbreviations and try to employ only the cor-

rect Latin of the Pharmacopæia, find that the pharmacist must telephone frequently to confirm one of our prescriptions. Were it not so serious, the mistakes made in copying prescriptions would be ludicrous. A certain physician who conducts a column on health and hygiene in the press—not naming any names—some time ago ventured to suggest a treatment for tapeworm. He advised a fast, a cathartic, then the dose of tapeworm poison, and two hours later another dose of cathartic to sweep out the poison. The types modified the directions a little. They made it read two days later. For the next week or two the doctor almost dreaded to open his mail, expecting hourly to learn of a death from typographic error. It was the last time he every printed a formula including strong medicines.

A very usual error in copying prescriptions is the substitution of the ounce sign (3) for the dram sign (3). An ounce is 8 drams, a dram is 60 grains, or about a teaspoonful. The omission or addition of a single letter, a mere comma, indeed, may change the whole character of a prescription and produce startling results.

Ownership of Prescriptions.—The courts have decided that the patient owns the prescription. The prescription is an order from the doctor to the druggist to prepare certain medicines in a certain way for a certain purpose. The druggist, under the law, must file in his records a correct copy. He prefers to retain the original and give the patient the copy—but that is for the patient to decide. Some druggists refuse to give back a prescription. Unless it be one calling for an opiate (which must be retained by the druggist under the Harrison narcotic act) the druggist's sole reason for this is the commercial desire to force the customer to return to his store

if more medicine is wanted. However, no really reputable druggist will try such tactics with a responsible customer. (A recent Illinois statute requires the druggist to retain the original prescription as his record.)

On many prescriptions—it should be on all prescriptions for the best interests of the public-these words . appear: "Non Repetatur," or the English equivalent, "Do not Repeat" or "Not to be Refilled." Some narrowminded persons imagine the intent of this order is to force the patient to return and pay the doctor another fee for rewriting the prescription. If that were true the doctor would indeed be unworthy of his position in society. The purpose is really this: Medicine which may be helpful today in a given condition is apt to be useless or positively injurious next month. If the doctor has reason to think the medicine may be safely and advantageously taken over a prolonged period without his supervision he will gladly prescribe enough to last as long as necessary. His charge for services is not a charge for merely writing a prescription, but for the examination and the skill employed in determining what is to enter into the prescription.

A druggist who will refill any prescription, be it labeled "Non Repetatur" or not, without the doctor's sanction is not the most trustworthy druggist to deal with. Of course, there are all kinds of people in every profession. Things are done for selfish motives. But morally, at least, it is unjustifiable for a pharmacist to fill a prescription for one person which he has good reason to believe was written for some one else. Of course, those druggists who will permit their names to be used as "recommending" or "guaranteeing" advertised nostrums will not hesitate at any little moral point like that. They

are out to "do" the grand old public, or that share of it made up of the frankly ignorant and the boastfully "wise."

Before we return to the vital subject of stomach troubles and indigestion may we not profitably say a word or two about the Great American Fraud?

Proprietary or "Patent" Medicines.-Most of the nostrums are taken into the stomach, so why not consider them in this chapter? What is a proprietary medicine? It is a drug or combination of drugs or foods manufactured and sold under a trade-marked name. is the only part of the business that is really on file at Washington. The formula is not, and generally cannot be patented. The common term "patent medicine" is in that sense a misnomer, because you can't patent a medicine unless it is really something new or original. All of the popular nostrums are more or less ancient, obsolete shotgun mixtures originally prescribed by some old bewhiskered, long-haired charlatan of the middle ages of medical history. When you swallow a mixture of half a dozen or a dozen different drugs all at one time you are just trying an experiment, even if the stuff is prescribed or sanctioned by a doctor. The patent authorities at Washington are very hard-headed creatures. They will gladly issue a patent when a new chemical is really discovered—some of the best medicines in the Pharmacopæia have been patented, and many of the modern drugs really deserve and obtain a patent-but you can't pour a lot of worthless junk into a big tank and boil it up and label it kidney cure or catarrh remedy, or blood tonic, or wonderful specific or female regulator, or corrugated clay or sarsaparilla purifier, or medicated

beans, and persuade the government to issue a patent. You must be content with a trade-marked title which no one else can legitimately use, but anybody can mix up the junk, bottle it, and sell it under any other name, and it will be just as bad as yours. Your only defence lies in keeping your stuff as secret as possible and changing the formula every now and then to keep 'em guessing. But the name—that's a trade asset. Never change that, no matter what happens to your formula. The name is worth good money, even though the formula is everybody's property. In fact, various inquisitive health departments, notably the Indiana Health Board, the New Hampshire Health Board, the Kansas Health Board, and others, are continually investigating formulas and showing up the dangerous or worthless ingredients in popular nostrums.

Any one contemplating the purchase of an alleged remedy or cure would do well to hear both sides of the story. One side you can hear, perhaps, in your daily paper—only the better papers refuse to accept money for aiding in the marketing of medical junk-and these better papers are still far between. The other side you can obtain in the published books and folders of The American Medical Association, 535 North Dearborn Street, Chicago, Illinois. Just write a letter to that address and mention the correct name of the medicine, appliance, or advertising "specialist" you have in view, inclose stamps for reply, and you will be placed in a position to learn some very interesting things about the inside workings of the Great American Fraud. This American Medical Association, of which the author, like most practising physicians of the day, is privileged to be a member, takes upon itself the duty of educating the public in all matters

pertaining to health. It has an active membership of upward of 50,000 doctors, including the representative men in every branch of the profession, and attacks crookedness within as well as without the profession in no timid way. One little book it distributes is largely a collection of articles originally contributed to Collier's Weekly by Samuel Hopkins Adams, now conductor of "The Advisor" department in the New York Tribune. book is entitled The Great American Fraud, and can be had by mail from the above address for 6 cents in stamps (in paper covers) or 40 cents in cloth. A large volume, entitled Nostrums and Quackery, can be had for \$1.50, and gives a tremendous amount of information about all sorts of nostrums. If you are anxious to learn about Cancer Fakes, Consumption Fakes, Convictions under the Pure Food and Drugs Act, Deafness Cure Fakes. "Female Weakness" and Allied Frauds, Medical Institutes, Mail-order Frauds, Men's Specialist Frauds, Mineral Waters, Murine Eye Remedy, Alcola, American College of Mechanico-Therapy, Carnegie University, Obesity Cure Fakes, Oxydonor and Similar Fakes, Sanatogen, Stuart's Plas-Tr-Pads and J. B. L. Cascade, Woods, Cures for Drinking and Smoking—just write to the address given above and enclose stamps for reply, mentioning what particular line of buncombe you are interested Enclose your stamps in the envelope with your signed request, seal the envelope carefully, and put on a 2-cent stamp—then you will learn something.

It is only human nature to have a sort of wavering faith in a secret remedy. We understand fully the psychologic reasons for this. And often enough just faith in the remedy will accomplish wonders. However, it is a crying shame that the post-office regulations and the

laws of the country should permit so much misuse of the mails by fakers of all degrees and kinds, and medical fakers in particular. To deceive the sick, to take the sick man's money on a miserable, fraudulent promise to "cure" something that can't be cured or more often something he hasn't got—that is the depth of meanness, but not a bit too mean for some of our church papers to help by advertising the false claims of these people.

Some reader may very properly ask why the doctors don't clean house themselves before they undertake to help the laity clean house.

Doctors and Proprietary Medicines.-Doctors have been grossly deceived for years by the false formulas of proprietary manufacturers, persuaded to prescribe numerous mixtures elegant in taste and appearance but inert therapeutically, and scores of other more or less secret, harmful, worthless proprietary nostrums. Free samples, curtain lectures by traveling "detail men," blotters, souvenirs, booklets, and medical journal advertising have served to keep the poorly educated physicians prescribing or recommending these expensive luxuries. "Resinol," "La-Pactic Pills," "Aspirin"—this one is really patented—"Peptomangan," and numerous others have been prescribed by so many incompetent practitioners that they have become quite popular, and many of them are bought direct by the public at department stores or cut-rate drug shops. The doctor's endorsement somehow adds to the confidence of the public in a proprietary nostrum, since the victim of the mischief never for a moment imagines his doctor would prescribe a remedy, the formula of which he (the doctor) could not give if called upon in court. A doctor is supposed to use his own skill and judgment in prescribing for his patient. When he allows

some firm to step in and treat the patient through him, but without his knowledge of the exact formula of the medicine the firm supplies, he betrays the trust reposed in him, deceives his patient, belittles himself in the eyes of his fellow-practitioners, and drags down his profession to the level of a miserable trade.

That will be about enough of the nostrum evil. Now back to the stomach again.

Dilated Stomach.—This is a sort of ballooning of the stomach wall, occurring occasionally in persons who have been very hearty eaters, and especially in those who have been accustomed to drinking large quantities of beer. The symptoms are more or less chronic digestive disturbance, with periodic attacks of severe illness characterized by great uneasiness, rumbling and churning in the stomach, pain, and finally vomiting of tremendous quantities of very sour liquid, the attack subsiding when the stomach is well emptied.

Acute dilatation of the stomach occurs sometimes soon after an operation or in the course of an operation. It is a serious matter, but can usually be relieved at once by the use of the stomach-tube.

A person with chronic dilated stomach should eat small meals at frequent intervals rather than three full meals a day, and he should drink but half a glassful of liquid at any one time. His diet and medication should be such as to prevent excessive fermentation.

Any obstruction at the lower gateway (pylorus) of the stomach will cause more or less dilatation. Thus, cancer of the pylorus, adhesion-bands or tumors pressing upon the pylorus, as well as stricture from former ulceration or injury, are common causes of dilated stomach. Gastric Ulcer.—Ulcers in the stomach and duodenum are practically alike in causation, symptoms, and treatment. Briefly, so far as known, these ulcers are probably due to infection of the stomach wall by such germs as the colon bacillus and others which, while normal inhabitants of the alimentary canal, cause trouble only under exceptional conditions. Ulcers are so frequently associated with old chronic gall-sac and appendix trouble (conditions notoriously due to colon bacillus infection) that good authorities now believe gastric and duodenal ulcer must be looked upon as secondary to a primary infective focus elsewhere in the body, even in the tonsils or the gums.

The symptoms are pain, most characteristically coming on an hour or more after eating and relieved more or less by taking food—"hunger pain"; vomiting occasionally, the ejected material being very acid, perhaps blood streaked or consisting almost entirely of blood; anemia and general poor health; periodic intervals of comparative relief.

The treatment is a matter for the doctor to determine according to the patient's condition. About half the cases may be helped by fasts, very frequent milk meals, stomach washing, and absolute rest in bed for weeks. About half the cases must submit to surgery as the safer plan.

Cancer of the Stomach.—Any obstinate stomach trouble coming on after the age of forty, and accompanied by noticeable loss of weight and failure of strength, should be considered malignant until proved otherwise.

Cancer of the stomach is the commonest situation for malignant degeneration.

Early symptoms are pain, loss of appetite, perhaps occasional vomiting of foul material, especially vomiting of fresh or partly decomposed blood ("coffee-grounds"). Failure of health and loss of weight after forty, in conjunction with stomach symptoms, indicate the need of immediate medical attention. A test-meal, analysis of gastric juice, and blood-count, if not an x-ray photograph, will usually settle the diagnosis in such cases. late to save the patient if the diagnosis is not made before a tumor or lump can be felt in the stomach. chance lies in an operation done before the lymph-glands back of the stomach are involved in the malignant degeneration. In fact, if there is a situation in which the socalled "antemortem autopsy" or exploratory operation is justified it is in a case of suspected cancer of the stomach. The wise course to pursue when there is such a suspicion, even if the diagnosis is still unsettled, is to undergo an exploratory operation at the hands of a good surgeon and under the co-operation of the family doctor who has had charge of the patient. Of course, there is no medical treatment which can offer the slightest hope in cancer.

Regulation of Meals.—The ideal breakfast consists of (a) some fresh fruit in season, (b) a dish of home-cooked cereal (not patent "sawdust"), (c) a soft-boiled, poached, or baked egg, or bacon and egg, or a chop and potatoes, and (d) a cup of coffee with cream and sugar. Toast or bread and butter may be substituted for the meat if one's occupation is sedentary or if one is too well nourished, and milk, cocoa, tea, or one of the cereal drinks may be taken instead of coffee if desired. Nervous persons and invalids may find tea, cocoa, or coffee objectionable by reason of their stimulating influence, but normal individuals do not suffer the evil effects commercial interests would have us believe. Children under twelve should have neither tea, coffee, nor cocoa, but milk and water.

Lunch.—At noon a lunch should be taken instead of a dinner, especially if one has physical or mental labor to do in the afternoon and leisure in the evening. The lunch may be some salad, bread and butter, a delicacy or a sweet, and a cup of tea if desired.

Dinner.—Better taken after the day's work is done, but not immediately after finishing work. A half-hour's rest is advisable before dining. First some soup, if desired. Then either fish or salad, or meat with vegetables, but certainly not two or three varieties of animal protein (flesh) at one meal. The "course" dinner is the ruination of many a successful man. It hastens the onset of arterial hardening and high blood-pressure. Bread and butter, or rice, or cheese and macaroni, or cake, or pie, or pudding may be taken at dinner. Coffee or tea if desired. Cold water ad libitum and whenever you are thirsty-cold water aids digestion. After dinner rest a while, or at least avoid very active mental or physical exertion. Music, conversation, "movies," a stroll, a loll, or even a smoke may help digestion. For nervous persons or those who are anemic or underweight, an hour's nap after eating is advisable.

Lunching at Night.—Grandma fed somebody mince pie or doughnuts or dumplings and noted that sleep was not sound, so she frowns on late lunching. However, your cat or dog seems to sleep soundly after a full meal—it is nature's way. You feel inclined to nap yourself after a hearty meal. For those who are underweight or insufficiently nourished a lunch before retiring, if desired, is healthful and makes the sleep sound. Of course, the lunch should be plain victuals, not freakish things—bread and milk or crackers and milk, a sandwich, some malted milk, some cold meat, but not rarebit, pie, beer

or party fixings, nor coffee, nor tea, nor cocoa, which stimulate wakefulness.

Salt.—Too much salt in the food is not good for the digestion or the kidneys. But there is little scientific evidence that salt-free diet can have more than a temporary effect upon kidney disease. Many people drink or sip hot water containing a pinch of salt at night for a laxative, which is all right, though the salt is not necessary. Salt in food adds savor and probably makes the food more digestible. Salt is indispensable in the blood and tissues, though, of course, it is obtained from natural foods and drinks if not supplied artificially in the diet. As for pepper and other condiments, we have already touched upon these injurious drugs. People with kidney or urinary disease, stomach trouble, or constipation should use little or none of the condiments.

Sugar.—More than half the solid matter of a baby's natural food consists of milk-sugar. Sugar of milk is more readily digestible and not so easily fermentable by bacteria as cane-sugar. Until a baby is six months old the stomach does not digest cane-sugar very well, but older children digest it and crave it, and should have it plentifully supplied in the diet. Grandma used to tell us "sugar makes worms," which is, of course, the veriest nonsense. An excess of sugar will upset digestion and precipitate an attack which grandma calls "worms"feverishness, coated tongue, heavy sweet breath, flushed face, white drawn lines about the mouth, perhaps vomiting and nervous twitching or picking at the nose-symptoms characteristic of acute intestinal "indigestion." Such an attack once in a while is really caused by round worms, the worms being passed from the bowel as the attack subsides, but as a general

rule it is caused by dietetic insults, feeding articles the child cannot digest, and, least commonly of all, sugar or candy. Pure old-fashioned stick candy—lemon, wintergreen, peppermint, horehound, etc.—is the safest kind of cheap candy; many of the "suckers" and nicknacks sold to children are dyed and flavored with injurious chemicals and adulterated with sulphites, glucose, and other cheap junk. Children should have sugar freely spread on their bread and butter, preferably brown sugar, which contains more of the natural mineral elements of sugar-cane and is really more digestible than white refined sugar.

Sugar is a quickly available form of energy, giving heat and work units to the body with the smallest possible digestive effort. It is especially useful for those doing much muscular work, for children actively at play, for those exposed to cold, and for persons whose heart is weak. Of course, it should be taken at mealtimes or after meals, not nibbled at all hours. This holds especially true with candy. Candy as a dessert is an ideal food, but it stands to reason that one should not continue nibbling at one's dessert at all hours of the day and evening.

Intervals Between Meals.—Since most foods require from two to four hours digestion in the stomach, a five-hour interval between meals is always a good rule for healthy persons. Those on special diets may take meals at closer or wider intervals. One on a milk diet, for instance, requires a meal every two or three hours as a rule. A good many persons, on the other hand, find a no-breakfast habit very healthful, while others eat a good breakfast and then fast until six or seven in the evening with happy results. It may be said that most persons

who are overweight, and especially those who suffer from that vast conglomeration of symptoms grouped under the title of auto-intoxication, profit physically by skipping a meal occasionally or by having an occasional milk-diet day. A few gain benefit by fasts lasting from twelve hours to as many days, but fasting is inadvisable without medical supervision.

Biliousness.—What is "biliousness"? It is nature's protest against intemperance in eating. A popular misconception attributes a bilious attack to bile or the liver for this reason—the victim is seized with nausea and vomiting, and there is more or less bile in the ejected material; furthermore, the attack subsides after the bilious vomiting, wherefore it is plain that the bile or the liver caused the trouble! Now the truth is that, regardless of cause, a vomiting seizure of any considerable severity will always show the presence of bile in the ejected material, provided there is no serious obstruction in the bileducts; first the stomach is emptied, then there is a backflow from the duodenum (into which the bile normally drains from the liver), and when this back-flow is ejected by repeated vomiting the bile is seen. Hence it is not possible to convict the liver or bile in biliousness.

A bilious attack is an effort on the part of the outraged digestive system to rid itself of the excess food packed into it by its intemperate owner. Nature is a pretty good doctor. First, there is loss of appetite, a fortunate thing indeed. Then vomiting, a still more fortunate thing. It is the logical outcome of excess. Active cathartics may prevent it, but fasting or reduction of the amount of food is better prevention. Calomel and salts will drive the burden through somehow, but temperance will keep the burden off the digestive system.

Biliousness is just the first outcry against abuse; autointoxication is the prolonged complaint from the tired metabolism; high blood-pressure and arterial degeneration is the established consequence of intemperance in eating and drinking; and the A B C of prosperity apoplexy, Bright's disease, and cardiac failure—may be looked upon as the tragic finale in this little biography of the arteries. Indeed, we do dig our graves with our teeth.

Liver Trouble.—Our friends, the patent medicine pirates, have educated the masses to think of "liver complaint" as a probable cause of all sorts of ills and, of course, along with this bit of chicanery goes the implied suggestion to "Take Bunkem's Alivary Pills for the Bowels, Liver, Kidneys, and Stomach." Yes, and the old-time doctor, who used to press a hand gently upon the patient's waistcoat and divine that his liver was "out of order." has contributed his good share toward the setting up of this popular conspiracy against the liver. And, finally, our ambitious drug-manufacturing houses have left no doctor's desk unadorned with their gratuitous "literature" in the endeavor to foster the use of all sorts of queer concoctions for "torpid liver," "lithemia," "uric acid," "bile stasis," "hepatic insufficiency"-whatever these high-sounding titles may signify-and, we regret to say, a good many practising physicians succumb to the temptation thus placed before them and prescribe these semisecret, hand-me-down nostrums in the original package instead of giving the patient the benefit of their own skill.

Let us here say that there is no pain or other symptom which warrants a diagnosis of "liver trouble." Even jaundice may be caused by some condition not of the liver at all. Notwithstanding the tons of circulars and almanacs and tainted prescriptions to the contrary, the diagnosis of liver trouble cannot be made with any degree of accuracy unless the doctor makes a careful examination of the undressed patient, chemical tests of the secretions or blood, and a general physical examination of the chest and abdomen. Any one who assumes that the liver is at fault on less evidence is destined to go on indefinitely experimenting on that liver.

Gall-stones.—The cause of gall-stones is an inflammation of the lining of the gall-sac or the lining of the gallducts. This inflammation is produced by different species of bacteria, notably the typhoid bacillus and its first cousin, the colon bacillus. Persons will develop gallstones or inflammation of the gall-sac many years after an attack of typhoid fever, and the typhoid germs may be still found in the secretion from the gall-sac (as in the case of the famous Typhoid Mary) or in the center of gallstones as long as twelve or fifteen years after the attack of The germs cause an excessive secretion of mucus from the lining membrane; a bit of this mucus mixed with a clump of germs forms a nidus or minute foreign body, upon which layer after layer of mineral material from the bile is gradually deposited until a gall-stone is formed, varying from fine sand or gravel to large masses the size of a hickory-nut.

Gall-stones are most common in persons approaching middle age, more common among women than among men, and characteristically prevalent among women who are too stout and who live sedentary lives. The symptoms of gall-stones may be mechanical or infective, or both. Mechanical symptoms are: (1) Reflex dyspepsia, gas formation, or indigestion of long standing, often attributed to some particular article of diet; (2) charac-

teristic attacks of biliary colic, extremely severe cramp or colic in the upper abdomen, accompanied by collapse or chill, perhaps followed by fever and sweat; (3) pronounced jaundice appearing a day or two after an attack of "indigestion" or colic. Any of these symptoms may occur in a given case or all in the same case. The infective symptoms are: (1) Localized pain and tenderness felt in and about the region of the cartilage of the ninth or tenth rib on the right side; (2) intermittent fever not otherwise explainable; (3) indications of septicemia or blood-poisoning; (4) sometimes abscess or acute peritonitis.

Many persons have gall-stones for years without suffering severe symptoms; they are "dyspeptic" or "bilious" or subject to trouble from gas.

Treatment for an established case of gall-stones is surgery. There is no known remedy which can dissolve gall-stones or cause them to pass. Any one, whether or not subject to gall-stones, who takes a large dose of olive oil or sweet oil (as such, or under the glowing title of "Wonderful Stomach Remedy") will very likely pass a number of lumps of partly saponified oil which might resemble gall-stones in the eye of a novice, especially if the dose is followed up with a disguised seidlitz powder or other alkali, as it is in most alleged "gall-stone cures." Real gall-stones are rather hard, and when fractured show concentric rings with a granular or crystalline center. Moreover, it would be only at the expense of excruciating agony if not death itself that stones the size of chestnuts could pass in quantities from the gall-sac.

In the way of *prevention* free water drinking and walking in the open air is advisable. A diet containing a large proportion of vegetables, green garden truck and

fruit, and but little meat. Avoiding corsets. And avoiding overloading the stomach at any time. Of course, it is up to the doctor to prescribe individually if in his judgment the case is one requiring internal antiseptic or other medicines.

Fruit.—Fruits are composed largely of water, with some starch, sugar, woody fiber, a vegetable jelly (pectin), and organic acids.

Fruit at the beginning of breakfast is appetizing and diminishes the craving for sweets at any time. Bananas, dates, figs, prunes, and grapes furnish more nutriment than other fruits. Muskmelon, watermelon, oranges, lemons, and limes contain the most water. Apples, lemons, oranges, and limes are richest in lime salts, potash, and magnesia, and are preventive and curative in scurvy.

Fruit eating reduces the acidity of the blood and urine. Many people with "rheumatic" or "gouty" tendencies fear to eat acid fruits because they imagine "uric acid" is the cause of their trouble. Of course, the organic acids (tartaric, citric, malic, etc.) in fruits combine with alkaline salts in the blood, forming alkaline carbonates, and hence would tend to prevent the accumulation of acids in the blood and tissues. Orange juice or lemon juice, for instance, is prescribed to diminish acidity of blood and urine.

Laxative fruits—prunes, figs, fresh apples, peaches, and berries—are good by virtue of their woody fiber and seeds as well as their fruit acids. By the way, seeds never cause appendicitis; if found in the diseased appendix a seed is there as a result of disease, not as a cause. In fact, one is less liable to have appendicitis if fruits containing seeds are eaten to keep the bowels regular.

Diarrhea.—The usual cause of acute diarrhea is some article of diet, generally milk, meat or cheese, which has undergone bacterial change before it is eaten. The remedy is, first, a fast of twelve to twenty-four hours; second, a cathartic, preferably castor oil, because of its binding secondary effect. When the offending substance is cleaned out of the bowel it only remains to keep at rest, preferably in bed, and avoid foods which irritate or activate the bowel. Tea without sugar or milk or iced tea is a good drink. White of egg cooked to taste, crackers, or zwieback (twice-baked bread) with just a trace of butter, perhaps a small portion of scraped beef or chicken-jelly, but no milk, no vegetables, fruit, or cereals.

Summer Complaint.—This is acute diarrhea, as just described. It is often ascribed to fruit, but that is generally not the case. Cholera infantum is an acute food intoxication in babies in extreme summer weather. It is caused by unclean milk, in the sense that the milk has not been properly handled at the dairy or in the home, the fault in the home being lack of proper refrigeration. The child should receive no artificial nourishment other than barley-water for twenty-four hours or until medical attention can be had. The clothing should be light and the air of the room kept as cool as possible. A sterilized food alone is safe for several days.

Cholera Morbus.—This is an acute diarrhea associated with much pain and griping, due to improper food or to milk or meat that has undergone putrefactive change. A mustard plaster (1 part mustard to 4 parts flour and cold water) should be applied to the abdomen, a dose of castor oil or salts given to sweep out the offensive material from the bowel, and a few drops to half a teaspoonful of spirits

of chloroform administered in a few spoonfuls of cold water for the cramps.

Chronic diarrhea may be of nervous origin, or it may be caused by a chronic catarrhal condition of the bowel from some form of infection, or by irritants in the blood in kidney disease, or as a complication of tuberculosis. Sometimes fissure in the anus causes a chronic diarrhea. Ulceration in the small or large bowel is sometimes the cause of diarrhea.

In a general way, but not necessarily for every case, these measures are helpful: Avoiding large quantities of fluid food or drink, especially at meals, avoiding coffee, highly seasoned foods, coarse vegetables, fruits, and large amounts of sugar. Meat, especially scraped beef, mutton or chicken, toast rather than bread, only boiled or predigested (peptonized) milk if any, no gravies or broths, tea with little sugar, rice, and a little cheese may be taken. As for medication and bowel washes, these are for the doctor to prescribe as indicated by individual conditions. Rest is as important in the treatment of chronic as it is for acute diarrhea.

Dysentery.—Tropical dysentery is caused by an ameba, a higher form of parasitic life than the germ. Epidemic dysentery is caused by Shiga's bacillus and by Flexner's bacillus, and is transferred from case to case exactly as typhoid fever is—contact, food, flies, and pollution of drinking-water supplies. Dysentery is a diarrhea accompanied by bloody discharges. Sometimes it occurs as a symptom of ulceration or inflammation of the bowel independent of contagion. The treatment is similar to that of diarrhea.

Hemorrhoids or Piles.—The veins draining the lower end of the rectum carry the blood directly into the portal

vein of the liver. These veins sometimes become dilated, and they are then called hemorrhoids or piles. Piles are exactly like varicose or dilated veins in the legs and varicocele or dilated veins in the scrotal region—once present always present, though not necessarily always giving trouble.

An "attack of piles" is inflammation of the enlarged vein or veins. It is exceedingly painful, and sometimes the blood within the vein or pile clots, and must be let out by incision before relief can be obtained. So-called "pile cures," none of which could possibly cure piles, owe what little vogue they have to coincidence—the inflammation happens to subside after the "cure" is used. Of course, it will be but a matter of time, if the victim does not practice the most careful hygiene, before the attack will recur. Bleeding piles are less likely to cause pain. but the frequent small or large hemorrhages will in time undermine the health and in some cases produce fatal anemia and exhaustion. Itching piles is the name vulgarly given to any cause of itching about the rectum or anussometimes piles, sometimes other conditions. Internal and external piles are so named according to their situation, whether inside or outside of the anus. But internal piles will be extruded with the act of defecation and remain outside unless carefully returned by means of the anointed fingers.

Treatment of piles consists in keeping the bowels active, not by physics, but by a diet suitable for constipation (to be described later). An attack of piles is a signal for the taking of a full dose of some saline cathartic, not merely to empty the bowel, but to reduce the pressure in the portal (liver) area, and thus diminishing the congestion of the inflamed pile. It is well to keep off the feet

as much as possible during an attack. Large hot moist compresses applied over a generous smear of belladonna extract and glycerin, equal parts, or a suppository containing belladonna and sulphur. Light diet, frequent doses of saline, or compound licorice powder, if preferred, to keep the stools soft and mushy, and very careful toilet of the parts should be made.

Prevention of attacks of piles consists in careful cleansing of the perineum after each bowel movement with soap and warm water, followed by a dash of cold water, thorough drying, and, if any irritation of the skin, powdering with talcum or zinc stearate powder. One failure may precipitate an attack. By careful cleanliness patients may go indefinitely without an attack. It is well to avoid pills or tablets containing aloes or aloin, which congests the rectum and pelvis and predisposes to piles.

The operation for piles is a minor operation, free from serious risk and a sure remedy. The family doctor can perform it—in some cases in his office under a local anesthetic, in others in the hospital or the patient's home under a general anesthetic. It requires perhaps two or three days in bed and a week's disability, but it ends the pain, annoyance, and danger of piles. Charlatans who advertise injection cures for piles are good people to evade.

Fissure.—A small linear ulcer, little more than a crack in the skin and mucous junction of the anus, is called a fissure in ano, and is exceedingly painful and hard to heal. The pain of fissure is a daily event or, at least, occurs with each bowel movement and for a considerable time afterward. It wears down the victim's health and strength and sometimes causes curious reflex

effects, such as symptoms simulating cancer of the stomach or other serious condition. The mass of the stool is apt to show a streak of blood. The condition is commonly mistaken for piles when no examination is made and, therefore, grossly mistreated. There is a fair possibility of healing the little ulcer by direct applications made to it by the doctor, but in cases of long standing the most satisfactory treatment is a simple operation under a general anesthetic.

Fistula is an opening in the skin near the anus, either communicating at its upper end with the cavity of the rectum or terminating in a blind space. It results from an abscess near the anus which breaks upon the surface, but fails to heal completely, leaving the sinus or fissure, which discharges more or less thin fluid through the scarcely visible opening on the skin. Fistula often occurs in tuberculous individuals, and is, in fact, originally a tubercular abscess in many cases. The treatment is operative. Anything else is generally love's labor lost.

Appendicitis.—What causes so much appendicitis among the younger generation? Why didn't our grandmothers hear of appendicitis in their time? Is it just a fad with the doctors nowadays to call every pain, every case of indigestion, every little bellyache grandma used to put to rout with her herb tea, appendicitis?

The commonest cause of acute appendicitis is our prolific old friend, the colon bacillus. Various ordinary pus-producing species of bacteria cause a good share of the cases. And no small number of them are due to infection by pneumococcus, the pneumonia or "cold" germ. Grandma and her old-time doctor called appendicitis "inflammation of the bowels" (peritonitis), and just let the patient die or get well, as God willed and nature

worked. It was not until about 1885 that Dr. Fitz, of Boston, described the disease, and so familiarized physicians with its symptoms that they began to diagnose these cases of "inflammation of the bowels." while the inflammation was still limited to that small appendage of the bowels called the appendix. We do frankly believe, however, that there is a certain fashion or fad element in the operation for appendicitis. We have personally urged upon patients, and assisted in operations which proved to be absolutely unnecessary—an error of the mind and not of the heart, or, of course, we would not speak of it here. But the point is that the surgeons, with only the most upright and philanthropic intentions, have succeeded in throwing around the appendicitis problem a stone wall of bias and fear which makes the family doctor hesitate to NOT advise operation in every case of appendicitis. The disease is a treacherous one, and no man can say at the beginning or early in the course of the first attack whether the patient will recover without operation. Nevertheless, here is what we would do if one near and dear should develop acute appendicitis: We would keep the patient absolutely at rest under the care of a skilled nurse, who would see to it that the patient did not even lift a hand or turn the head for forty-eight hours. We would apply an ice-bag to relieve the pain and, if necessary, give sufficient morphin hypodermically to control the pain. No food, no water, but only small bits of ice to slake thirst. Possibly an enema, but never a cathartic. Then we should wait and pray. If at the end of forty-eight hours the patient did not seem on the gain, we should have surgical counsel, and if the surgeon considered it best we should have him operate. all we shall say here about the treatment of appendicitis.

No one knows the function of the appendix, if it has any. It may be a vestigial structure, the remains of a portion of the alimentary canal lost in evolution in the course of many centuries. Yet we cannot consider it the part of good surgical judgment to remove the appendix as soon as a diagnosis of appendicitis is made, regardless of circumstances, as many surgeons formerly advocated and too many still practice. The best surgical authorities in America no longer advise or practice such procedure.

Chronic appendicitis occurs in older persons—along toward or after middle age—and is rather an involution or atrophy or shrinking of the appendix than an inflammation. It produces mostly reflex symptoms—"stomach trouble" and vague digestive disturbances of a recurring, obstinate character. Sometimes the physician can feel the hardened, contracted cord-like appendix under his fingers. Other times he advises a frank exploration, and learns, or does not learn, that his suspicions were correct.

Constipation.—Since Mr. Lane, the London surgeon, began removing the colon for the relief of auto-intoxication and allied complaints, constipation has become fashionable under a new title—viz., food stasis or enterostasis. Stasis means standing still. Have you got it? Then out upon your colon! What is the use of retaining tonsils, appendices, wisdom teeth, colons, and similarly useless organs in our midst just to make us trouble? Beside Mr. Lane's operation and its various modifications, the new name has brought into existence a veritable host of highly recommended brands of mineral oil to take the place of our old-fashioned laxatives.

Grandma or the old practical nurse is responsible for a large share of the cases of constipation. There seems to be a human or inhuman craving on the part of all the sophisticated neighbors and bystanders to feed a new baby castor oil. The castor oil obsession among "experienced" nurses is worse than the calomel obsession among the older doctors. A baby can't stretch himself and utter a faint peep but that some one must urge a dose of castor oil. Each dose exerts a pronounced binding influence and creates the need for another—sort of a vicious circle. It takes perhaps half a dozen bottles of castor oil to establish a confirmed constipated habit, which is likely to follow the unfortunate child through the better part of his life.

In babies and children faults of diet are the usual cause of constipation. Breast milk or modified milk may contain too little fat or be too poor in solids. Older children may be fed articles they should not and cannot digest. Patent medicines which are free from harm in other ways may be used to such an extent as to weaken and disorganize the natural peristaltic (wave-like) movement of the bowel through interference with the delicate nervous control.

Negligence in answering the call of nature at a regular time each day is a very common factor of constipation. Insufficient water drinking, or a diet too limited in vegetables and fruit, or insufficient fats, or an excess of meat, or too concentrated food which leaves too little residue to furnish a normal stimulus to the bowel—any or several of these factors may be active in a given case.

Lack of general exercise and lack of special exercise (chiefly the fault of corsets and belts) and lack of breathing exercises will invite constipation.

Excessive use of condiments and highly flavored foods, irregular eating, and hasty eating without thorough mastication will predispose to constipation.

Piles or other painful rectal conditions are almost always accompanied by constipation—the constipation of pain or inhibition, in contradistinction to the diarrhea of terror or relaxation. Pelvic disease in men and women, chronic appendicitis, gall-stones, dilated stomach, sagging (ptosis) of the bowel, and partial obstruction of the canal by old bands of adhesion from former inflammatory exudates will produce constipation. Hernia (rupture), if not supported properly, will cause troublesome constipation.

Treatment of Constipation.—Drink 2 quarts of water a day. Fruit for breakfast and plenty of cream on the home-cooked cereal. Unfailing regularity in going to stool each day at a set time, and patient but not too prolonged or forcible effort while there, but no reading or smoking. Avoid pills and tablets containing aloes or aloin or other harsh cathartics—the so-called entirely vegetable pills are among the worst used. Milder laxatives had better be taken if necessary, such as 1-grain tablets or lozenges of phenolphthalein flavored as desired, or a few drops of cascara two or three times a day, or the old-time senna leaves chopped up fine with figs, preserved in a fruit-jar, and taken as a chew each morning (senna should act in about five hours). Olive oil is a mild, harmless laxative to take at bedtime-a tablespoonful. Any of the mineral oils may be taken, but they are very expensive laxatives. They have no virtues over ordinary laxatives. Never use castor oil or salts as a mere laxative without some special reason.

Exercises of the abdominal wall and general room gymnastics help considerably, as does a daily open-air walk, preferably after breakfast. If the abdominal wall is flaccid or relaxed a suitable supporter may bring great improvement.

The diet should contain raw cabbage, celery, lettuce, onions, cucumbers, and the like in season. Such vegetables as beets, turnips, baked potatoes, green corn and canned corn, tomatoes, and, in fact, all the bulky vegetables are good. Figs, dates, prunes, apples, peaches, grapes, and bananas are good.

Some perfectly healthy persons whose diet is rather restricted and small in bulk have a movement of the bowel only every two or three days.

The Enema Habit and the "Internal Bath."—For very exceptional occasions an injection or enema of water or soapy water is a valuable means of emptying the lower bowel of accumulated material. It had better be given from a fountain reservoir, which should be some 4 or 5 feet above the patient's hips, the patient lying on the back or the left side. A soft-rubber tip (English red rubber catheter No. 12) for babies and children, or the regular rectal tube which opens at the end for adults. These soft tubes may be connected and disconnected readily with an ordinary small straight syringe nozzle. The bulb syringe and the piston syringe are not so safe and satisfactory as the fountain syringe or reservoir. The water should be about the temperature of the body, all air should be expelled from the tube, and the flow started as soon as the tube enters the rectum, the lubricated tube being gradually twisted and pushed in after the flow of water until it has entered, say, 6 or 8 inches. much water may be injected as the patient can comfortably retain, and it should be retained for twenty minutes or more, if possible, in order to produce a thorough effect.

Suppositories of whittled soap or glycerin are sometimes used, but these, too, should be for very occasional resort only, being irritating if habitually employed.

The daily use of any form of enema or suppository or "internal bath" is more objectionable than the habitual use of laxative medicines because laxative drugs are mere specializations from nature's own agencies, whereas the enema is quite unnatural and the enema habit much more difficult to break. The very plausible arguments advanced in the paid reading notices of the "internal bath" are ludicrous to a physician. When any one imagines a mere rectal injection can in any way clean the body internally his knowledge of anatomy and physiology must be sadly restricted; but the charlatan who fathers the "internal bath" knows how to play upon popular credulity, being also the exploiter of a "cure" for failing sight and a curious "health" magazine, which has a warm welcome for any plausible fake that can buy advertising space.

Mucous Colitis.—An unusual condition of the large bowel, called mucous colitis, is accompanied by attacks of colicky pain and the expulsion of large amounts of mucus or slimy, stringy material resembling undigested vegetable fiber. Sometimes these masses of mucus are in the shape of casts of a portion of the colon. This disease is usually associated with a nervous condition, whether as a result or a cause of the latter we cannot say. Cathartics are harmful in this condition. It requires general dietetic and medicinal treatment as well as bowel washes.

Alternating constipation and diarrhea is not unusual in cases of fecal impaction—the large, hard masses of fecal material accumulate in the lower bowel or the rectum, set up irritation, and so produce an occasional attack of diarrhea, which, however, may fail to carry out the impacted bowel contents. There is generally considerable

pain attending this condition, though not so colicky and severe as that of mucous colitis. It must be relieved by enemas of oil or sometimes by direct removal of the hardened mass. Cathartics fail to dislodge it.

Obstruction of the Bowel.—When a baby cries as though in pain, passes nothing but a little blood-streaked mucus (slime) or blood from the bowel, and refuses food, intussusception (obstruction of the bowel by the slipping of one length into another) must be thought of, especially if a sausage-shaped lump can be felt in the abdomen.

Causes of obstruction in older persons are strangulated hernia (rupture), stricture of the canal resulting from the contraction of scar in the situation of an old ulcer, pressure upon the bowel by tumors or swellings or bands of adhesions from former inflammatory troubles, and in rare cases the accumulation of a mass of round-worms.

In intestinal obstruction there is first obstinate constipation, with steadily increasing pains and tenderness of the abdomen, vomiting, which persists despite all remedies for several days, becoming more offensive, failure of enemas to bring away fecal material, steadily increasing weakness, and finally collapse in three to five days if the condition is not relieved.

If there is obstruction of the bowel cathartics of any kind are deadly poison and only hasten the patient's collapse and add to his sufferings. Nothing but enemas may be safely used. All food and medicine by mouth must be discontinued, and if anything only water given to rinse the mouth and ice for thirst. Early resort to surgical relief is the only proper treatment.

Rupture.—In babies hernia (rupture) at the navel is frequent, especially if the stump of the umbilical cord has healed badly. There is a little lump or protuberance

under the skin of the navel, and this lump disappears when pressed back into the abdomen. It is, like all hernias or ruptures, a bulging of a portion of bowel or some other abdominal structure through a defect or weak place in the abdominal wall.

Older persons may have hernias in a similar situation, but the usual situation is in or near the groin. Here, in men, is a natural canal through which the testicle has descended on either side into the scrotal sac from its abdominal position during prenatal life. The canal sometimes fails to close sufficiently to prevent a portion of bowel or other structure from following down, and that means hernia. The hernia may not appear until years after birth, but it is the result of a congenital condition nevertheless. Some severe strain is liable to bring it on for the first time in one predisposed. In women the more usual site of hernia is just below the groin (femoral hernia), where a weak place in the muscular plain permits bulging.

In babies proper support of an umbilical or navel rupture will often cure the condition in time. In young babies a cotton-padded button or coin covered with clean linen and strapped in place upon the navel with crisscross strips of zinc oxid adhesive plaster, ½ by 8 inches, makes a very good support. For older children a belt with a similar pad may be preferable. If a hernia is not cured at the third year it should be operated on.

Trusses for hernias in older persons are best selected and applied by a doctor, and not by a drug clerk or a truss manufacturer, because everything depends upon anatomic knowledge and an accurate diagnosis. For instance, it is a regular occurrence to find a man wearing a fancy priced truss which has been "fitted" by a selfconstituted "expert," not to the inner opening of the canal where it should be applied, but to the outer ring or even below the ring where the "lump" appears to the ignorant "expert." Such a truss can give no comfort or support, and is, in fact, a menace to the patient's life.

The Cure of Hernia.—It is a rare, we might almost say an unknown, thing for a truss to cure a hernia in an adult or even in a youth. In childhood or infancy a cure is fairly common, but the best one can expect from the most perfect truss in the case of an adult is support, but not perfect support. The safest thing one with a hernia can do is to have it permanently cured by operation. This is distinctly safer than taking chances with or without a truss or other support. Any young person with a hernia or rupture should have the radical cure performed without hesitation as a mere matter of economy and comfort if not for the safety the operation confers.

Injections, fake "plas-tr-pads," and "cures" for rupture advertised in magazines and newspapers are worthless and dangerous things to experiment with.

Strangulated Hernia.—This is the ever-present danger in any case of rupture. A strangulated hernia is one in which the neck of the protrusion somehow swells and constricts the protruded structures, shutting off circulation and shutting off the bowel—obstruction of the bowel. If simple measures applied by the physician do not relieve it and replace the hernia within a few hours at the most, immediate operation must be done as the only chance of saving life, and it is a slim chance at that. If the strangulation is not promptly relieved the patient is bound to die within five days. By no means a majority of victims of rupture ever suffer from strangulation, but enough of them do suffer to make it well worth while to escape this

serious risk by having a rupture surgically cured while the conditions are suitable for clean surgery.

Ptosis means drooping or sagging. In recent years much attention has been paid to ptosis of abdominal organs-stomach, liver, bowel, kidney particularlyowing to the light x-ray photography and bismuth testmeal studies have thrown upon this common condition. Briefly, many persons seem to have a marked displacement or loosening or relaxation of one or several abdominal organs without showing or feeling the slightest unpleasant effect. Others suffer extremely from a slight ptosis. We think the question is comparable to eyestrain. Some persons have markedly defective evesight and never feel any symptom of ill health whatever, whereas others with only moderate defects suffer headaches or digestive disturbances or some other effect until the strain is removed by proper glasses or rest of the eyes. It is probably the relative reserve strength that accounts for such differences. One with a large reserve of energy can endure a small strain with no evident exhaustion, but one with little or no reserve nerve power will suffer under comparatively trivial drains.

Now a diagnosis of ptosis having been made by means of the x-ray photograph with or without a bismuth test-meal, what is to be done? Sometimes the displaced organ may be surgically replaced and sutured in position, with the happiest effects. But, as a rule, the patient prefers to depend upon a suitable external supporter, posture, massage, muscle development, and the like to prevent the strain. This is a special place for individual medical instruction according to the conditions present. No general suggestions will suffice. It is enough to say that some very obstinate and perhaps alarming symptoms

may be completely relieved only by detecting and remedying an unsuspected ptosis. The patient's general muscular development, build, and habits seem to have little to do with ptosis. One discovers such a state of affairs causing marked disturbances in young, vigorous active men and women as well as frail, long-waisted, nervous, dyspeptic, chronic grumblers.

Posture, however, is a very important factor, if not the principal cause of ptosis of the abdominal organs. About one in every three individuals habitually assumes a faulty posture. We believe universal physical training should be obligatory in all schools for the benefit of the race.

CHAPTER XII

AUTO-INTOXICATION, THE BLOOD-PRESSURE, AND ARTERIAL DISEASE

IF not at birth then very soon after birth vast colonies of more or less harmless (saprophytic) bacteria find an ideal breeding place in the alimentary canal. When we consider that even certified milk, the purest kind of cows' milk, may have as many as 10,000 bacteria per cubic centimeter (about 40,000 germs in a teaspoonful), and ordinary market milk, which is considered pure enough by the general public, may contain from that number up to 500,000 germs per cubic centimeter, the tremendous number of bacteria introduced in natural foods becomes apparent; and if not at once destroyed by the acid of the gastric juice, these bacteria find favorable conditions awaiting them in the alkaline or neutral fluid of the intestines. Here they multiply at an enormous rate, so that, indeed, the greater part of the bulk of fecal matter passed from the bowel consists of living and dead bacteria.

Now any child knows that milk, for example, will sour and ultimately become unfit to drink, if not positively poisonous. It sours by virtue of the production of lactic acid by certain bacteria naturally present in milk. The milk-sugar is decomposed by fermentation by the lactic acid bacilli and the acid causes the milk to curdle.

Within the alimentary canal similar fermentative and decomposition processes are taking place continually.

Some of the by-products are more or less poisonous. For instance, the product of the decomposition of animal or vegetable proteins (nitrogenous food elements), such as lean meat and the gluten of wheat or the curd of milk, is capable of killing an animal in a very short time if injected hypodermically. The product of colon bacillus decomposition of meat is far more poisonous than that of vegetable protein.

The Colon Bacillus.—Bacillus coli communis or common colon bacillus is a natural inhabitant of the bowel of animals and man. Under normal conditions it is a non-pathogenic germ (incapable of causing disease), but under other conditions it may become pathogenic and, indeed, virulent in its effects. Thus, colon bacillus appendicitis is the most frequent form of appendicitis. Further, the colon bacillus causes many inflammatory conditions in and about the abdomen, and is now known to be a frequent factor in the production of gastric and duodenal ulcer and gall-stones.

But a more familiar effect of colon bacillus and allied bacterial action upon the contents of the intestine is what we call toxemia or auto-intoxication. When the metabolism is unable to cope with the poisons or toxins elaborated in the bowel and in part absorbed by the blood, symptoms arise. These symptoms are extremely variable in different individuals both in degree and in kind. They cover conditions extending all the way from slight "tired feeling" or "dopy feeling" to the most extreme convulsions, coma, and even death. Auto-intoxication, then, is just an idea, not a disease nor even a definite group of symptoms.

Why should the metabolism fail to take care of toxic matter which thus reaches the blood from the alimentary

canal? And why doesn't everybody suffer from the effects of such poisons—auto-intoxication? Several factors are concerned in the development of symptoms from autointoxication. The character of the diet and the amount of food taken into the stomach; the relative degree of mastication; the activity of digestion; conditions favoring stasis or prolonged retention of alimentary substances in one part of the canal—these factors would obviously have an important bearing. And then the activity of the various eliminating organs would determine the amount of toxic matter retained in the blood. Finally, the functional capacity of the internal secretions (ductless glands), which exert a very marked influence upon the oxidation process or metabolism of foods and poisons alike, would be a very important factor in the development of symptoms. All of these conditions must obviously vary in different individuals and at different times in the same individual.

As the case stands it would seem that life is just one long debate between man and his colon bacilli.

Bear in mind how much better animal protein is than vegetable protein as a pabulum or food for colon and allied bacilli, and that the better you treat a germ the more ungrateful and virulent he becomes—like some militant nations—and you will begin to realize why it is that doctors are eternally preaching that people eat too much meat.

It is unnecessary and impossible to discuss the manifold symptoms of auto-intoxication. We have explained what auto-intoxication or autotoxemia means. Of course, the intestinal canal is not the only source of toxic material. Defective kidneys, for instance, may cause uremia, a serious or fatal auto-intoxication, and inadequate perspiration or respiration would cause or increase auto-intoxication already present. Given a condition of prolonged auto-intoxication, what is the effect on the general health of the body, and how is the effect produced?

Effect on the Metabolism and Circulation.—We have said that certain hormones or ferment-like substances physiologically supplied to the blood by ductless glands (thyroid, adrenals, etc.) have the power or function of activating the process of oxidation or burning up of tissues and food and poisons. If an excess of food or of poison is poured into the blood these ductless glands will react to the demand by secreting an increased quantity of the necessary hormones or internal secretions to take care of the load. Now that means a greater fire, a heavier head of steam, so to speak. If the excessive demand is altogether beyond the capacity of the ductless glands, they simply fail to respond, the individual gets sick and stops eating so heartily, or otherwise lessens the load upon his metabolism. On the other hand—and this is a misfortune, though it seems a paradox—if the individual is the owner of a very resourceful ductless gland system, a very elastic metabolism, he can withstand for months and years an overload of food or poison which would soon put a frailer person under the care of the doctor. But the hearty one is under a heavy head of steam just the same; he is burning up pretty fast; his large output of hormones not only takes care of the burdens thrown upon his metabolism, but also raises his blood-pressure above the normal. And so we find himfeeling fine as a fiddle, looking big, jovial, hearty, perhaps florid, generally a bit too stout, but always boastful of his health—with a blood-pressure that would do very

well for a man old enough to be his dad. And having found him, let us leave him there panting for help, while we determine just what blood-pressure means.

Blood-pressure.—Everybody knows what water-pressure is in the city water system. Well, blood-pressure is the tension or force with which the blood is driven through the arteries into the capillaries and on into the veins. The pressure is determined by the force of the heart beat and by the resistance offered by the tubes through which the blood flows. If these tubes could be suddenly doubled in caliber the pressure would fall, and if they could be reduced in caliber the pressure would rise, other things being equal. You know how it is with the arteries-they are surrounded by a muscular coat which makes the artery smaller in caliber when it contracts and larger when it relaxes. The muscle of the artery is under the control of vasomotor nerves, which we have already described in the chapter What Shall I Wear? The vasomotor nerves are part of the sympathetic nervous system which controls metabolism and organic functions "while you sleep." The sympathetic is closely associated functionally with the ductless glands. So here we are again—as the Hebrew said when introducing himself to the doctor who exacts \$5 the first call and only \$2 for subsequent consultations—here we are back again upon those ductless glands.

If something tells the nerve centers that a heavy job is on the way down the gullet, or a large dose of toxin is being elaborated by the colon bacilli in the bowel, or a big drink of liquor or beer has just arrived in the stomach, the nerve centers send out impulses which excite the vasomotor nerves and cause contraction of the muscular coat of the arteries, which raises the pressure upon the

blood. If these insults recur over a prolonged period the increased blood-pressure becomes a permanent fixture, but the man himself, mind, may still be feeling fine as a fiddle and looking what the lay observer calls the picture of health. In other words, he withstands the strain while his ductless glands continue to produce the necessarily excessive quantity of internal secretions demanded to oxidize and care for the poisons. But before we go on and describe the inevitable denouement, let us dwell for a moment upon the "picture of health."

Where the Arteries First Break Down.—A close or critical inspection of the florid face of the high liver or the moderate drinker past thirty-five usually shows that the "fine healthy complexion" is nothing but a fine mottling with minute dilated arterioles, especially noticeable in the skin of the cheeks. There is where the first visible arterial degeneration occurs. It will not be long. if habits continue the same, before such a person will develop definite symptoms of arteriosclerosis or hardening of the arteries. He is a good subject for one of the ABC lesions—apoplexy, Bright's, or cardiac degeneration because the arterial strain falls hardest upon the terminal or end-arteries in the brain, kidneys, and heart. A hearty eater 10 to 40 pounds overweight, without a pain or ache, feeling better than he has ever felt in his life before, with a blood-pressure just a wee bit too high and those significant little visible danger signals in his cheeks and perhaps just a tendency to shortness of breath on exertion—such a man may imagine himself healthy, but he is a mighty poor risk in the estimation of the life insurance examiner.

Old Age at Forty.—At sixty or so most normal individuals show some appreciable hardening or stiffening

of the arteries. Old age is a vascular infirmity—a man is as old as his arteries, and a woman is as old as she looks. At sixty or so the ductless glands physiologically knock off and begin to take life easier, whether their owner has that much sense or not. At sixty or so one has the right to speak of growing old, but not before sixty.

If high blood-pressure, from overeating, alcohol, infection, worry, tobacco, lead, and other things which make heavy demands upon the ductless gland system and metabolism, continues for a considerable period of months or years the inevitable result is actual degeneration of the muscular coat, the deposition of lime salts, the loss of elasticity, and the encroachment of stiffness or hardness—arteriosclerosis (sclerosis means hardening). A man has his life practically at his own disposal; if he prefers to live high or fast or regardless, then he must expect to grow senile early.

Mortality rates in the United States Census Reports show that the death-rate among persons over forty has actually increased during the past ten years, whereas the death-rate for all other periods of life has decreased. The A B C of prosperity appears to be rising. The line on the chart climbs steadily. Men are not living so long as their fathers lived, but faster and higher. Men are not walking like their fathers did, but motoring or riding in street cars whenever they can. Prosperity kills unless you know how to stand it. No one so lavish as the newly rich.

Symptoms of High Blood-pressure.—The doctor diagnoses hardening of the arteries by the feel of the arteries to his finger, or by seeing the tortuous temporal arteries standing out and throbbing upon the temples. He diagnoses high blood-pressure by listening to the heart and

hearing the loud snap at the closing of the aortic valves by the back pressure against them; by noting how difficult it is to shut off the pulse by pressure upon the artery at the wrist, but more accurately by measuring the blood-pressure with the sphygmomanometer. instrument consists of an inflatable rubber tube like an inner tube of an automobile tire, which can be wrapped about the arm and tied in place as a cuff; a small rubber tube connects this with a mercury column or an aneroid dial: the same small tube is connected with a little airpump. By adjusting the cuff about the bared upper arm and inflating it by pumping the air-pump the pressure gradually squeezes the great artery in the arm and shuts it off, so that the doctor's fingers no longer feel a pulsebeat at the wrist. When the pulse disappears, he reads the height of the mercury column or the figure indicated on the aneroid dial. The column is graduated in millimeters. Blood-pressure readings are, therefore, expressed in millimeters, meaning that the pressure of the blood is sufficient to raise a column of mercury, say, 120 millimeters.

The symptoms produced by high blood-pressure vary widely. One person with a pressure of 200 or more feels no noteworthy symptoms as yet. Another with a pressure only 10 or 20 millimeters above normal may complain of shortness of breath on slight exertion, dizziness, general falling off in efficiency and endurance, and various other symptoms. In fact, it is difficult to say in any given case whether the symptoms are to be ascribed to the mere mechanical effect of elevated blood-pressure or to concomitant or complicating conditions. We think every person past thirty-five should have a general physical examination at least once a year, includ-

ing a careful urinalysis and estimation of the bloodpressure, just as one would have an automobile overhauled each season, as a matter of economy, to detect and correct minor troubles before they become major troubles. Some insurance companies are furnishing free annual medical examinations to policy-holders as a measure of economy, so there must be sound reasons behind the idea.

The Normal Average Blood-pressure.—High blood-pressure, contrary to a common notion, does not mean too much blood or too rich blood. On the contrary, many persons with high blood-pressure are distinctly anemic and require treatment to strengthen and improve the corpuscular strength of the blood. If the old-time procedure of bleeding is occasionally revived for the relief of a pressing emergency like apoplexy or impending apoplexy or uremia, it is not to be assumed that this is done to lower blood-pressure permanently, but only for a few hours or a few days at most, for that is the only influence bleeding can have.

The average blood-pressure is not necessarily that indicated by the first measurement, for mere excitement will easily elevate it 20 or 30 millimeters; nor is it that taken after a hearty meal, or active exercise, or a long ride or other strain, but for persons under thirty the average normal pressure is about 120 millimeters. From thirty to forty years of age it is from 120 to 130 millimeters; from forty to fifty years of age, 135 to 140 millimeters; from fifty to sixty, 145 to 150 millimeters. When the blood-pressure is constantly 160 millimeters or more it must be considered a positive sign of pathologic conditions, and insurance companies will not accept as a good risk a person with a pressure above 150. In children

from two to eight the blood-pressure is from 80 to 90 millimeters; from eight to sixteen, 80 to 100; and from sixteen to nineteen, 105 to 110 millimeters.

Bright's Disease, or Nephritis.—Acute inflammation of the kidneys occurs chiefly in the course of scarlet fever, measles, chicken-pox, or other infectious disease, being caused by the irritation of bacterial toxins or the poisonous products of bacterial life, which the kidneys, like the skin, bowels, and lungs, have to eliminate from the blood. Puffiness and swelling under the eyes, pale or waxy color, dropsical swelling of the legs or arms or face, low fever, poor appetite, and the passing of only small quantities of urine are symptoms. The disease runs a course of several weeks and generally terminates in gradual recovery, though in some cases it goes on into a chronic nephritis. The older medical authorities assert that cold and exposure alone may cause acute Bright's disease, but we have never observed such a case in hospital or private practice.

The prevention of acute kidney inflammation is the use of a diet including plenty of liquids, like milk, vegetable soups, lemonade, orangeade, grape juice (diluted), and water; comfortable but light night clothing or underclothing and bedclothing, preferably wool next the skin; daily bathing to keep the skin active; plenty of fresh air to keep the system toned up—and fresh air means cool air, never very warm air, as the old-time idea had it in Bright's disease.

The treatment is a question entirely within the family doctor's province, depending as it does upon individual conditions.

Chronic Bright's Disease, or Chronic Nephritis.—In discussing auto-intoxication, arteriosclerosis, and high

blood-pressure we have pretty well covered the subject of causation of Bright's disease. It is really an arterial disease, the kidney function being impaired secondarily to the damage wrought by defective circulation. Overeating, alcoholism, auto-intoxication, and toxemia from infections about cover the cause of chronic Bright's.

The same causes may be given for heart failure (chronic myocarditis, fatty heart, angina pectoris, dilated heart, and valvular disease), and overeating is the chief of these causes of degeneration.

Prevention of Degeneration.—We shall speak here of the prevention of degeneration, including in that term arteriosclerosis, apoplexy, heart disease, and Bright's disease—all part and parcel of arterial breakdown.

It is hard to decide whether alcoholism or overeating should be considered the greater factor of degeneration. Alcohol is a more rapid poison, but excess nutriment is probably more universally the fault. As for alcohol, some physicians who like their beer or whisky still endeavor to uphold what they call moderation, but in this day of hard common sense it scarcely seems necessary to say that so well recognized a poison as alcohol is not helpful or healthful in any quantity whatever and should never be used as a beverage. Whatever spurious reasoning may lead an adult to indulge in a treacherous beverage, certainly we owe it to our children to see to it they may never have the opportunity to drink until they are at least twenty-one. If they don't drink before twentyone, they will generally be wise enough to leave it alone after twenty-one.

Overeating.—What constitutes overeating? Of course, any one who habitually eats more than enough to meet the daily demands upon his energy throws a burden

upon his metabolism and his arteries, even if he seems to digest his food perfectly. Eating with an abnormal appetite stimulated by condiments or beer or even drugs (bitters) is often overeating for the individual. Eating three or more meals a day when in reality one would be satisfied with only two meals or two meals and a lunch is a very general habit of overeating. Going out in the evening and partaking of a course dinner or attacking a banquet or choking down a buffet lunch is the worst kind of overeating. Sitting down and submitting to the browbeating of a hale and hearty gourmand or the gentle arts of an anxious hostess is a martyrdom one is sorely tempted to inflict upon one's metabolism.

Remedies for High Blood-pressure and Conditions Accompanying It.—Fasting is the logical remedy for all this state of affairs. Mind, we say fasting, and not starvation. One fasts by voluntarily abstaining from food. The most injurious kind of food commonly eaten to excess is meat. Let the fasting begin with meat. The worker can work even better and feel even better on a diet which includes only three meals of meat a week than he can on a diet including meat three times a day. The substitutes best adapted to supply the energy and "staying power" of meat are cheese, cornmeal, macaroni, oatmeal, bread and butter, and sugar. A wood-chopper or plowman may metabolize a far greater ration of meat than a factory hand or mail-carrier, and the latter workers require perhaps twice as much animal protein as the shoe clerk or the housekeeper, and these, in turn, need more than the student or the preacher can properly metabolize. No rules can be laid down for general guidance, but this may be taken as thoroughly established in the science of nutri-Less meat and more vegetable protein—peas,

beans, cornmeal, oatmeal, bread, and rice—is conducive to health.

For all adults inclined to "biliousness" and overweight, whether the blood-pressure is above normal or not, an occasional day of milk diet is advantageous. The bread and milk club members ascetically observe Monday of each week as a day of abstinence, taking some bread and milk or crackers and milk or just milk every two or three hours from early morning till bedtime. An average of 2 quarts of milk through the day is ample. The idea is to give the metabolism a brief respite, allow the ductless glands to gain a better grip on work, and repay the stomach and liver for the insults heaped upon them over Sunday. Some members do not stick to their vows—the world is made of all sorts of people—but most of the charter membership is still intact and even grateful.

An active skin is maintained by a cool sponge or shower or plunge baths each morning, and an occasional hot bath or hot pack or Turkish bath.

Moderate muscular exercise in the open air is by all odds the most efficacious remedy for high blood-pressure and incipient hardening of the arteries—the best preventive, we had better say. Golf for the old boys, tennis or maybe amateur ball-tossing for the younger boys, and walking for everybody.

Walking as a Medicine.—Some medical philosopher has prescribed two miles of oxygen three times a day as his one favorite prescription for premature senility. He knew his pathology, that fellow. Walking jogs the torpor out of the liver, limbers up the diaphragm, enlivens the circulation, increases the oxygenation of the blood and tissues, improves the activity of the skin, overcomes constipation, brightens the spirit, and lightens

the day's work. The automobile, we think, is a very prolific factor of high blood-pressure and early degeneration because it is interfering with the democratic and salutary habit of beating it afoot as in the days of old. Auto-intoxication was discovered before the automobile came to boost the mortgage, but even so it is a good name. One of the best authorities on metabolic disorders states that long automobile rides distinctly tend to raise blood-pressure and frequently render impotent all the usual remedial measures. The strain of speed, the unrelaxation of driving, the anxiety of ownership and responsibility tell, even on the confirmed enthusiast.

Vacations, even though they last but a week-end or a day, are advisable. Everybody should have an annual vacation and spend it in simple pleasures.

CHAPTER XIII

CONCERNING THE BLOOD AND THE HEART

THE blood constitutes about one-twentieth of the normal body weight. A loss of one-fourth of the whole amount is usually tolerated, but a loss of one-third is almost invariably fatal.

In life the blood is never acid, but always alkaline, due to sodium carbonate and sodium phosphate in the plasma or fluid part.

The blood-plasma or fluid is straw color, like the serum that accumulates in a blister, containing salts of sodium, potassium, magnesium, iron, calcium (lime), besides albumin, some fats, traces of glucose (sugar), and various other organic ingredients.

The red color of the blood is imparted by the red corpuscles, some 5,000,000 being present in each cubic millimeter of normal blood. The red corpuscles constitute about half the entire mass of the blood. Seen under the microscope, the red corpuscles are really a pale yellowish color. Their color is due to hemoglobin, which constitutes 95.5 per cent. of their substance. Hemoglobin is a variety of albumin. It forms a loose chemical union with oxygen in the lungs and serves as a carrier of oxygen to the tissues. It also carries carbon dioxid from the tissues to the lungs. Hemoglobin likewise possesses a chemical affinity for such poisons as carbon monoxid (coal-gas), nitrous oxid (laughing

gas), and other poisons or medicines. The poisonous effects of coal-gas are produced by the displacement of oxygen by carbon monoxid in the hemoglobin molecule of the red corpuscles, thus asphyxiating the victim. The anesthetic effect of laughing gas are similarly produced. Dentists and surgeons now combine oxygen with nitrous oxid gas and maintain anesthesia over a prolonged period without producing cyanosis or blueness of the skin as nitrous oxid alone does.

White Corpuscles.—There are also about 8000 white or colorless corpuscles in each cubic millimeter of blood. The white cells are the scavengers of the blood, the phagocytes, as they are called (phago, swallowing, and cyto, a cell—swallowing cells), because they do swallow and digest or destroy bacteria and other foreign substances, as can be readily demonstrated under the microscope.

Blood-count.—The hemocytometer is an instrument with which the physician can make a fairly accurate count of the number of red and white corpuscles in a cubic millimeter of blood under the microscope. A blood-count aids in the diagnosis of various types of anemia or weak blood, and the white-cell count serves as a guide in the detection and prognosis of acute inflammatory affections and localized formation of pus, as in appendicitis, pneumonia, etc. An increase in the number of white cells is called "leukocytosis," and means that the blood is recruiting its army of defense to repel an invasion by an enemy.

As there are various types of leukocytes or white corpuscles in the blood, each taking a different stain and exhibiting peculiarities of size and structure, a differential count of the leukocytes is a routine part of a complete examination. An unusual increase in the proportion of polynuclear whites (cells with many nuclei) suggests pus somewhere. A disproportionate increase in the mononuclears (one nucleus) is indicative of a primary anemia. A marked increase in the ratio of eosinophiles (white corpuscles taking a peculiar red stain) is a sign suggesting the presence of a parasite-like tapeworm or trichina.

Clotting of Blood.—Blood will not clot in the vessels while the circulation is maintained, but clots as soon as circulation ceases or the blood is drawn from the body. First it "sets" in a jelly-like mass, which contracts in a few hours, separating into clot and clear straw-colored serum. The clot is dense and tough, like flesh, if clotting has been slow; soft and easily broken in pieces if clotting has been rapid. Clotting is produced by the action of a ferment (fibringen) set free when the blood is exposed to air or evaporation. Lime salts are essential in the coagulation process. The clotting time is prolonged by certain diseases, such as jaundice, and hence operations are more difficult in such cases. The clotting time is prolonged to a dangerous point in "bleeders," persons who have some hereditary defect or lack of something essential in the coagulation process. Curiously, this hemophilia ("bleeders'" affection) is inherited only from the mother, who is not herself a bleeder.

Blood passes through the complete circuit of the circulation—from left ventricle into aorta and the great arterial trunks to all parts of the body, through the arterioles, the capillaries, the venules, into the veins, back to the great vein (vena cava), to the right auricle, through the right ventricle to the lungs, and from the lungs back to the left auricle and ventricle again—in about thirteen seconds.

Blood-stains and Tests for Blood.—The great differences in shape, size, and structure of the blood-corpuscles of man and animals enables the investigator to distinguish blood from man and that from a fowl, for instance. There are also chemical tests by which the blood of man can be distinguished from that of any animal. Under certain circumstances it is possible to even identify the blood of a particular individual, and we feel certain that such a great medicolegal test will be an everyday aid of justice in the future.

Anemia.—When the blood contains less than the normal number of red blood-corpuscles or lacks the normal amount of hemoglobin (coloring-matter in the red cells) we say the individual is anemic, has weak blood. There are different types of anemia recognized. The common type is simple or secondary anemia. Then there are three kinds of primary anemia—chlorosis (or the "green sickness"), pernicious anemia, and leukemia. These are called "primary" because of the very grave changes in the blood, and because no definite cause can be assigned for them; they are assumed to be primarily diseased conditions of the blood-producing structures. But in recent years the impression is growing that all anemias alike are secondary, the types varying with the nature of the underlying causative factor.

Simple Anemia.—Named in a sentence, the common symptoms of simple anemia are general weakness, shortness of breath on exertion, tendency to dizzy or faint spells, dull or more or less constant headache, fluttering or palpitation or darting pains or neuralgic pain about the heart, nervous irritability, unsatisfying sleep, finicky appetite, perhaps loss of the normal color, paleness of lips and mucous membranes generally, maybe flushed

cheeks and blue-white brightness of the eyes, and often "that tired feeling."

Causes are almost innumerable. Foremost, we think. is bad air-warm air, indoor life, air contaminated by gas-stoves unattached to flues, air contaminated by the blood-poisonous coal-gas escaping from defective stoves, air too thoroughly sifted of the dreaded but nevertheless salutary draft. Lack of sunshine (too closely curtained or shuttered windows), too much compassion on rugs, draperies, and wall decorations. Digestive disturbances, improper food, and auto-intoxication. Small, trifling, or unnoticed hemorrhages, as from internal piles, adenoids, gastric or duodenal ulcer, excessive menstrual flow or other hemorrhagic ailments of women, miscarriages, nosebleeds, or severe hemorrhage from any cause. The poisons of various diseases, like Bright's or cancer, and especially the tuberculin circulating in the blood in incipient tuberculosis, anemia being the only noticeable symptoms for months in many cases of beginning tuberculosis of the lungs. Chronic lead-poisoning in painters, artisans, even women who use hair dyes or face powders containing lead. Malaria, syphilis, chronic pus infection or septic mucus, as in so-called chronic "rheumatism," pyorrhea, abscesses about roots of teeth, deep in tonsils, etc.

Obviously, the treatment of secondary anemia is the removal of the cause. While such remedies as iron, arsenic, and the like may help in restoring health in some cases, they cannot cure anemia until the underlying cause is detected and removed.

Chlorosis.—This disease usually affects girls from thirteen to twenty years of age. All of the symptoms of simple anemia plus absent or very scanty menses and the peculiar greenish-yellow paleness of the skin give the doctor a hint, and his microscopic examination of the blood distinguishes the condition from ordinary anemia.

Pernicious Anemia.—This affects men or women forty years old or more. It is progressive, characteristically showing periods of temporary improvement alternating with periods of downward progress. The patient usually has marked stomach trouble, and may, in fact, have cancer of the stomach. Also there is generally more or less evidence of spinal cord disturbance, shown by numbness, weakness, or pain in one or both legs. The color of the skin is strikingly lemon-yellow, cachectic, death-like, the yellowish tint being the fat under the skin showing through without the normal pink of the blood. The fat is pretty well preserved even in a severe case, unlike cases of cancer or other serious constitutional disease.

The cause of pernicious anemia is probably some form of toxemia of bacterial origin; many physicians believe it is of intestinal origin, some even hold that the Bacillus aërogenes capsulatus in the intestine produces the specific poison which breaks down and destroys the blood-cells. As for this we cannot speak positively, but certainly the results obtained by some competent men in the treatment of pernicious anemia by long-continued colon irrigations and a diet adapted to discourage the activities of this bacillus would seem to offer some support to the idea. Such a diet is generally one with little or no animal protein (meat), a diet upon which the bacillus does not thrive.

Leukemia.—In this form of anemia there is an enormous increase in the relative proportion of white corpuscles in the blood, together with enlargement of lymph-

nodes, spleen, and other structures rich in lymphoid tissue. The cause is unknown; possibly it is of malignant nature like cancer, possibly caused by some specific type of bacterial infection. Vaccine treatment, x-rays, and in some cases surgical removal of the approachable glands offer a chance of cure.

Where Blood-corpuscles are Produced.—The bonemarrow of long bones and ribs, the spleen, the lymphnodes and the thymus glands, and, to a considerable extent, the liver produce the blood-corpuscles.

Hemoglobin is analogous to the chlorophyl of plants. Sunlight is as necessary for the health of the body as it is for the health of a geranium or a rose or a potato vine. Our bodies do not get enough direct sunlight; we should always seize an opportunity to let the sun bathe the naked skin, within reasonable limits, of course. Sunlight is the most powerful stimulant to the manufacture of blood-corpuscles our materia medica can boast.

Fresh fruits and the green vegetables offer the best or most readily assimilable iron for the building of new blood.

Sense and Nonsense About Blood Tonics.—Among physicians scientifically posted the simple inorganic forms of iron are known to be quite as effective if not so widely advertised as the organic forms of iron for medicinal use. The fact is that the iron in the blood must come from natural food, not from medicine. Medicinal iron stimulates digestion perhaps, and stimulates the blood-making structures, but it is quite improbable that iron administered as medicine can be utilized to any important extent for the actual building of hemoglobin. For instance, it is not at all uncommon to administer in the course of a day or two more iron than the entire

blood normally contains. At any rate, it is an established fact that all medicinal iron, organic or inorganic—"vegetable, animal, or mineral kingdom"—is broken down into elementary components and reconstructed into the particular compound suitable for assimilation by the blood. Hence the physical form of the iron administered as medicine in a case of anemia—if the case really demands iron, and many cases do not—is a matter of no importance except as one or another form may be more readily taken by the individual, and, of course, there is nothing less injurious or disagreeable than the simple, old-fashioned mineral iron salts, such as iron and ammonium citrate dissolved in water, or reduced iron taken in pill or tablet form, or very freshly prepared pills of iron carbonate (Blaud's pills).

Ready-made Blaud's pills—pills that have stood for weeks or months before the patient gets them—are worthless. They generally pass through the alimentary canal unscathed.

The common fear that iron will injure the teeth is based upon the old-time tincture of iron chlorid, which is very acid, the acid, of course, putting the teeth on edge. Iron itself cannot injure the teeth.

The heart is pear-shaped, base up, as big as your fist, but a lot stronger, weighs about 10 ounces, and pumps one-third of its weight of blood at each beat. It speaks a language of its own—lub-dup, lub-dup, lub-dup—signifying all's well. When all is not well the heart changes its tune, and the doctor knows by what it tells him through his stethoscope. The heart-beat is largely controlled by sympathetic nerve ganglia in the heart wall. An animal's heart has been made to continue beating regularly for thirteen hours after complete re-

moval from the body. But the rate and rhythm of the heart-beat is controlled by the pneumogastric or vagus nerve, which comes from a center in the medulla of the brain.

The heart muscle is supplied with blood just like other muscles, and has endurance or lacks it the same as other muscles, according to the way you train it and feed it. Tainted fuel—alcohol, tobacco, drugs, toxins—will ruin a heart just as impure gasoline will spoil a good engine. Think of the heart as a little motor pumping perhaps 10 tons of blood per day—a tidy little job for a 10-ounce motor.

Elasticity of Cardiac Reserve Power.—In all valvular and degenerative conditions of the heart the important point in prognosis and treatment is the relative amount of reserve power the heart can retain. Whether a valvular defect or a heart muscle degeneration be the cause of the trouble, the physician's outlook is to preserve or possibly amplify the capacity of the heart to do its necessary daily work while the patient rests, and also a fair amount of additional work so that the patient may be reasonably active. In a normal heart the reserve power is that which enables a man to run to catch a car without becoming winded. In fact, "second wind" is a question of a well-developed cardiac reserve power. In a properly trained athlete the reserve is sufficient to cope with extraordinary strains. In the heart crippled by valvular leakage or muscle degeneration (fatty heart, myocarditis, angina pectoris, etc.) the reserve power is relatively low and shortness of breath ensues promptly upon the slightest exertion. By means of judiciously applied rest, medication, and graduated exercises the reserve power of a damaged heart may be gradually

built up to such a point as to permit the patient to pursue a fairly busy life so long as he avoids excesses. In medical parlance reduced reserve power is called "loss of compensation," and a crippled heart which has been scientifically strengthened as described is said to be "well compensated." The term "compensation" implies that with a valvular leakage the heart muscle must pump more blood at each beat in order to supply the body, and at the same time compensate for the portion which leaks back through the defective valve.

This description must suffice for general heart disease. We have already explained the effects of arterial disease and high blood-pressure upon the heart. The arteries which supply the heart muscle are affected by hardening the same as arteries elsewhere. When markedly diseased the coronary arteries, as they are named, may be quite shut off temporarily, and this is supposed to be the cause of the agonizing attack of vice-like pain in angina pectoris (angina means pain, and pectoris means breast—breast-pang). At least the disease generally occurs in persons around or after middle age who have very high blood-pressure or hardened arteries, and it is suspiciously frequent among men who smoke heavily.

"Neuralgia of the heart" is a vulgar name for angina pectoris, but should not be confused with the simple stabbing or darting pain anemic or nervous people frequently feel over or near the heart. The latter is probably a mere neuralgia of the intercostal nerve (between the ribs) which sends branches to supply the skin near the nipple. In angina the patient is seized with an overpowering pain or contraction which prevents him from making a single unnecessary move, and it is often accompanied by a premonition of impending death if

not death itself. Angina, too, may be felt entirely in the pit of the stomach, or in some cases down the left arm even in the fourth and fifth fingers.

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Coal-tar Progs and the Heart.—Some of the most powerful pains alliers are derived from coal-tar. You will note the word assaudiful on the label of a great many of the proprietary remedies for headache, neuralgia, and "grippe" and "cold"—whatever that may mean. In the United States the law requires that dangerous poisons or this kind be mentioned on the label if present in the medicine. Uncle Sun wants his children to know that they are taking a poison. Accumilid is but one of them. Phenaceum is another, antipyrin is another—all of them depress and weaken the heart, break down the red blood-corpodes, and iterally and truly "dope" the victim so that he is incapable or leeding pain or fatigue or hardly

anything. Every doctor, every pharmacist knows how dangerous these coal-tar derivatives are, and yet there must be at least five hundred different trade-marked names for "cures" containing these poisons—proprietary remedies which, in many cases, the druggist will even recommend and suggest as "perfectly harmless."

Coal-tar Poisoning.—A single dose of acetanilid—such as is present in your headache tablet, for instance—may bring on alarming symptoms if the heart is weak or the blood anemic. There is a peculiar numbness and dazed feeling, coldness of the extremities, ashy color, perhaps nausea, sometimes blueness of finger-tips and lips or the entire body, weak rapid heart action, collapse, and, in a large number of officially certified instances, death. Even when a coroner's jury returns a report of death from one of these proprietary medicines the newspapers advertising such dangerous remedies carefully suppress the name of the poison, advertising money being more valuable than truthful news. If any reader is in the habit of taking migraine, headache, grippe, "cold," or neuralgia remedies we would advise him or her to be extremely cautious or seek medical advice regarding the safety of the medicine used.

Most of them depend upon a coal-tar derivative, a heart poison, for any pain-killing effect they may have, and not one of them can really cure any disease whatever.

Tobacco and the Heart.—No person under the age of twenty-one should be permitted to indulge in tobacco in any form. It is bound to produce injurious results if used by growing children. For older persons the moderate use of tobacco may not show apparent bad effects for years, but if kept up it will certainly hasten the onset of arterial degeneration and shorten life.

A single smoke raises the blood-pressure above normal. A single smoke, by actual test, reduces the smoker's physical efficiency about 25 per cent. (Seaver) and reduces mental efficiency 2 to 10 per cent. (Bush). A single smoke makes the pulse-rate increase. In medicine a stimulant that will raise blood-pressure 6 or 8 millimeters, increase the pulse-rate perhaps 10 beats a minute, and make the victim think he felt better would be quite a considerable little stimulant.

Typical of tobacco-poisoning from habitual smoking is the specific disturbance of the great pneumogastric or vagus nerve which controls the rhythm of the heart, the sensation of the lungs and throat, and the secretion in the stomach. The patient complains of "heart-burn" from excessive acidity; of some irregularity of heart-beat or palpitation, with pains resembling the pains of angina. The symptoms continue until some time after the tobacco is discontinued, then they disappear, to return only when the tobacco is resumed.

Tobacco hardens the arteries and, therefore, injures the heart.

The Cure of Alcoholism.—The defective nervous system which craves narcotics is commonly hereditary. Certain nervous and constitutional diseases of the parents or grandparents damage the stock, impair the cell, and mark the offspring with the stigma of weakness. It is more surprising that all the children of diseased or neurotic parents do not become alcohol or drug habitués than it is that only a minority of the offspring resort to such means of forgetting their handicap in the mad competition of life.

At first, it is true, the use of alcohol as a beverage may be a mere social amenity or, at most, a habit. But in time the nervous system comes to depend upon the narcotic and will not perform its functions without it. There is always a stage in the drinking habit which carries the victim over from habit to disease, from desire to necessity, and then the unfortunate is as unaccountable for his drinking as is the epileptic for his fits. The habit creates in a susceptible or defective nervous system a positive craving, which becomes as insistent as the normal man's appetite for food, and must be met regularly, whether it be thrice a day or once in a month. The steady drinker is no better, no worse, than the periodic drinker. Both are diseased and entitled to intelligent treatment quite as much as is the subject of epilepsy or insanity.

Institutional Residence Essential.—There are those who seem to think alcoholism and drug habits can be overcome by moral suasion and by a tapering-off program under the family doctor's management at home. We have never observed any very satisfactory results from home treatment for these conditions. There is one great drawback about such a plan—the patient is on his or her own honor not to take drug or drink without the doctor's sanction. Now, whoever has had much experience with alcohol and drug habitués must know that they can no more be trusted in that respect than can the epileptic be trusted not to have a seizure without the doctor's permission. And as for the secret "cures" advertised in publications of easy conscience by alleged institutes, we can positively assert that they are one and all commercial schemes and by no means advisable.

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There is no reason why there should be secrecy about

such treatment. It is useless to treat a patient unless he desires to recover his mental health, and, of course, the advertised "secret cures" never cure. There is likewise no acceptable reason why the treatment of alcoholism or drug habits should be more expensive than general medical treatment is, and there is good reason why the family doctor should conduct the treatment or consult with the physician who treats the patient at frequent intervals in the course of the treatment.

Too many fake "institutes," "retreats," and "sanatoria" are in the business of plucking victims of alcohol and drug habits. It is difficult to understand why people will rush into the clutches of such institutions instead of seeking the advice of the family doctor as to the standing of the institution before entering.

The drinker in the disease stage will vehemently declare he doesn't need treatment; that he can quit without any treatment. That is one sign that he can't. He never does, so far as our observation goes. He may really try desperately to avoid drinking, but when the craving comes he will gratify it in spite of pledge or promise, in spite of family, honor, everything. It is hardly fair to ask him to pledge himself unless the signing of the pledge is followed up at once by a course of treatment for his diseased nervous system.

The so-called Lambert method, which is freely published for the benefit of any physician who cares to employ it, has proved fairly efficacious in ordinary hospital practice. It does not invariably cure, and no known treatment is invariably successful, but it accomplishes enough to warrant more general use, since it may be applied on the ward of any hospital by any competent physician and without special expense. It is applicable

for drug habits as well as for alcoholism, but our personal observation and opinion is limited to its use to remove the craving for alcohol.

Tobacco Habit.—In a reasonable share of trials of the silver nitrate treatment for tobacco habit it appears that the treatment is not without value, but it is especially useful when combined with other measures. The silver nitrate is used as a mouth-wash and gargle night and morning for three weeks, the strength of the solution being \frac{1}{2} of 1 per cent., the solution being prepared by the pharmacist. The patient should, besides, confine himself to a strictly non-meat diet for at least ten days. should eat freely of fruit, drink freely of water, milk, buttermilk, or lemonade, and consume all the good candy and sugar he desires as a dessert, not irregularly. He should take a cool sponge, shower, or plunge bath each morning, and a hot bath or hot pack or Turkish bath every two or three days. A prescription from the doctor for a suitable nerve tonic for the first two weeks will aid considerably in removing the craving for tobacco. daily walk in the open air of at least three miles should be taken, and if desired gum may be chewed freely to overcome the dryness of the mouth. Of course, the patient should avoid smoke-filled rooms and smoking friends while he is educating his nervous system to work without artificial assistance.

CHAPTER XIV

UNDERWEIGHT AND OVERWEIGHT

Any of the following articles, when taken daily in addition to a normal maintenance diet, will produce an increase of 20 pounds in weight in a year: Three slices of bread, one-third of a quart of milk, three-fourths of an ounce of butter (von Noorden). We should add to the Professor's schedule, for the good of the Order of Lean Folks, one slice of bread spread with a nice thick layer of butter or oleomargarine and completely concealed under a coating of brown sugar. Bread 'n butter 'n brown sugar on makes by all odds the finest and most assimilable tonic and upbuilder we know.

One who is underweight should undergo a complete physical examination by the family doctor, even though there is no reason to suspect any particular organ. The doctor's skill may enable him to point out some little trivial thing that keeps the weight down. And sometimes surprising disclosures are made in such an examination. Quiescent tuberculosis may be discovered; some inherited yet remediable condition may be found; evidence of the existence of parasites in the bowel or a hidden focus of infection or auto-intoxication may be brought to light.

What should be the normal weight? This is a question of averages. We present a table giving the average weight at various ages in both sexes:

Age.	Sex.	Weight (pounds).	Height (inches).
Ū	Boys		(inches). 20
Birth	Girls		20
			251
6 months	Girls	151	25
12 months	ß Boys	201	20
	Girls	19 1	28 1
18 months	ßoys	223	30
	€ Girls	22	29 1
2 years	ß Boys	26½	321
	Girls	25½	321
3 years	Boys		35
3 Julis	Cirls		35
4 years	{ Boys		38
4) 00101	Cirls		38
5 years	{ Boys		411
3,	Girls		411
6 years	{ Boys		44.
•	Girls		431
7 years	{ Boys	49\$	46
	Girls	48	45
8 years	Boys	···· 54½ · · · · · 52½	48
-	Girls Boys		. 48
9 years	Girls		50 40 1
	Boys	661	493 52
10 years	Girls	64	51 1/2
	ß Boys		54
11 years	Girls	701	53 2
12 years	§ Boys	79 1	55 1
	Girls	81 1	57
	f Boys		58
13 years	Girls		58 1
14 years	6 Boys		61
	Girls	100	60
15 years	∫ Boys		63
	(1) Girls		613
16 years	§ Boys		651
	d Girls	113	61 1

Height.	Ages: 17. Pounds.	20 to 24. Pounds.	25 to 29. Pounds.	30 to 34. Pounds.	35 to 40. Pounds.
4 ft. 11 in	III	113	115	117	120
5 ft	113	114	117	119	123
5 ft. 1 in	115	116	118	121	125
5 ft. 2 in	117	118	120	123	127
5 ft. 3 in	120	122	124	127	130
5 ft. 4 in	123	125	127	130	133
5 ft. 5 in	125	128	131	134	138
5 ft. 6 in	128	132	135	139	141
5 ft. 7 in	132	135	139	143	145
5 ft. 8 in	136	140	143	147	150
5 ft. 9 in	140	144	147	150	154

The normal average weight of a man varies with his height according to the following table:

A man 4 ft. 6 in. high should weigh 92 pounds.

"	5 ft.	**	46	**	115	**
66	5 ft. 2 in.	**	46	"	125	**
ee	5 ft. 4 in.	"		44	135	"
"	5 ft. 6 in.	**	**	"	143	66
66	5 ft. 8 in.	44	44	66	155	66
"	5 ft. 10 in.	**	**		170	"

" 5 ft. 11 in. to 6 ft. should weigh 180 pounds.

Insurance companies smile upon anything less than to per cent. excess of weight in young candidates, since they consider it a sort of favorable sign, indicating a good resistance against the tuberculosis, which, it seems, we nearly all have in latent form, if tuberculin tests are to be accepted at face value. But in a person past thirty excess of weight is distinctly frowned upon as a sign indicating overeating, auto-intoxication, and perhaps future arterial degeneration.

Assuming there is no physical abnormality to handicap the metabolism, and that there is no family tendency to underweight, it becomes necessary to look into the environment and habits for a possible explanation. Emotions and Temperament Concerned.—It is a well-known fact that stout people are good-natured and thin people are apt to be peevish and crabid—not to inject personalities. Of course, this rule is literally riddled with exceptions; nevertheless it is a rule. It is equally true that thin people are busy, active, nimble, in a hurry; whereas stout people are slow, methodical, lazy. Now here we have some valuable suggestions from the best of advisers, Old Doctor Nature: Avoid anger, jealousy, hatred, envy and hurry, haste, unnecessary exercise if you would grow stout. Cultivate slow, gentle, methodical, easy-going ways, and a cheerful, philosophic, kindly, amiable disposition. Don't take life too seriously. Look upon it as a humorous adventure, for it is nothing else after all.

See how the heartsick youth emaciates and the proud young father puts on flesh. What is it that wastes the frame of this poor little mother and that heart-broken father? Worry and anxiety. The depressing emotions act upon the physical as well as the nervous metabolism. Even the emotional actress grows worn and wasted in a busy season of work. The lean may smile and the gaunt may be popular, but somehow these virtues always sit better on a generous frame.

Rest, Relaxation, and Sleep.—An hour or even a half-hour of relaxation after dinner, which should be the evening meal, is an aid in building flesh. This had better be taken lying down fully relaxed and if possible napping. An hour earlier to bed at night and an hour later up in the morning will surely bring a gain in weight. Long hours in bed is a prescription which a great many young working people need, because it is impossible to draw upon the energies by a long day's work and then go out to a dance or a show or somewhere till all hours of the night.

It is a common experience for spare, scrawny individuals to put on considerable weight during a vacation in the country, because they retire earlier and have a livelier metabolism, thanks to open air and sunshine.

Foods for Fattening.—Farmers "grow fat" by feeding hogs on corn. Cornmeal is not only fattening but full of "staying power" besides. It is cheap and wholesome and mighty good to eat in the shape of Johnnycake, fried mush, and other unbeatable delicacies.

Butter, cream, bacon, pork, mutton, fat meats and gravies, olive oil, sugar, pure candies, and peanut butter are all fattening, and for most people very digestible foods.

If dinner is at 6 or 7 o'clock a light lunch may be taken at 9 or 10 before retiring. Bread and milk, bread and butter spread with brown sugar, crackers and milk, a little good candy, or some simple sweetmeat makes a digestible lunch and will not disturb sleep, but, on the contrary, will make you sleep better.

Half a pint of fresh cream, or if cream seems too rich, then fresh milk, taken about mid-forenoon and midafternoon, is a famous way to grow fat.

A tablespoonful of a mixture of cod-liver oil and extract of malt in about equal parts, taken an hour or two after lunch and supper each day in cold weather, is a distinct help when the general strength is poor.

In certain cases the patient is somewhat anemic. Simple anemia in a person underweight often calls for minute doses of arsenic, with or without iron, as the doctor deems best.

Reducing Weight.—Obesity or overweight may be considered a result of three factors: (1) Overeating, (2) insufficient exercise, and (3) functional incompetency of the ductless glands. The third factor is sometimes

hereditary, but most frequently acquired after adult age.

The functional activity of the ductless glands varies widely in different individuals in health. The internal secretion from the pancreas, for instance, may be considerably greater in one person than in another, and so one individual's capacity to assimilate or oxidize (metabolize) fats or sugars or carbohydrates may be larger than another's. And likewise with protein—meat. Thus it is impossible to make any fixed rules or give a diet which would be applicable to all cases of obesity or overweight. The problem is to determine exactly what the individual's actual diet represents in calories or fuel units, then to reduce it to the level of a normal maintenance diet by cutting down or cutting out unessential articles.

In order to accomplish this purpose without seriously inconveniencing the patient it is necessary to understand the caloric values of ordinary foods as served at table. The United States Department of Agriculture has a number of Farmers' Bulletins for free distribution (5 cents each to Canada or Mexico), giving valuable data concerning various foods and their nutritive value. Bulletins No. 34, 85, 93, 112, 121, 128, 142 especially, being Principles of Nutrition and Nutritive Food Value; 298, 240, 182 discuss respectively Meats, Fish, Sugar, Bread, Beans, Peas and Legumes, Eggs, Nutrition, Corn and Corn Products, Cereal Breakfast Foods, Poultry.

Let us again call attention to the opening statement of the present chapter as evidence of the importance of small excesses in the daily ration. It is much easier to prevent obesity than to reduce weight, but the young man who begins to grow stout is inclined to enjoy his distinction, and the young woman who discovers herself accumulating weight resorts to tighter corsets, salt baths, and all sorts of futile experiments rather than consulting her physician.

While the knowledge of the caloric or fuel value of different foods is always a help to the individual desirous of keeping his diet at the lowest nutritive value compatible with health, still a successful reduction course requires regular supervision by a physician, because, as stated before, no general rules will apply to all cases. It is up to the doctor to determine whether a diet including only 80 grams of protein and less than 2000 calories per day can be safely used, and if so, how long. A person 50 pounds overweight may reduce perhaps 25 pounds in a few months by dieting. Then, as a rule, it is well to increase the diet a little, just enough to keep the weight stationary for a month or two, and later to resume the reduction diet. Nature abhors a vacuum, you know. You must give your startled skin time to adapt itself to the change. And your metabolism too.

Occupation, climate, age, and other factors enter into the question of normal maintenance diet. But as an example of a maintenance diet for a man of thirty-five, weighing 150 pounds, engaged in office book-keeping, the following will suffice:

Breakfast: Fruit in season. One slice of bread and butter or toast.

One egg. One cup of coffee containing I ounce of milk and
I teaspoonful of sugar.

Lunch: One slice of bread and butter. Piece of meat about 5 x 3 x 1/2 inches. One medium-sized potato. One cup of tea. Small dish of ice-cream, pudding, or pastry.

Dinner: One slice of bread and butter. Meat, twice the quantity allowed at lunch. Two ounces of peas. Two ounces of squash. (An ounce is two level tablespoonfuls.) Small dish of any vegetable salad. Dessert, preferably fresh fruit. Small cup of coffee.

If this diet maintains normal weight, the cutting off of fruit from the breakfast, dessert from the lunch, and salad from the dinner would reduce weight at the rate of about 1 pound a week. If the man were 40 pounds overweight the diet as given would probably reduce him rapidly enough.

In America everybody tries to eat as much as everybody else, and if anybody takes it into his head to eat half of his customary excess everybody thinks he needs a tonic or something to help his appetite.

In America, too, everybody doesn't know how to play. Instead of going and sitting down at the ball game it would be much better for our nerves, digestion, and metabolism if we would go and play the game ourselves somewhere in the back lots. If we can't do that we can at least tumble summersaults in our own parlors, or if we haven't any parlor, then in our bedrooms. We can unbend occasionally and make monkeys of ourselves with the best of effects on digestion and metabolism and without losing any real dignity we may have concealed about our person. Fat people should learn to play.

Anemic Obesity.—During periods of enforced rest, as after operations, accidents, acute illness, or a sentence to jail, there is a tendency to pile on superfluous tissue. In some cases of incipient tuberculosis under forced feeding this anemic obesity develops after a time. The treatment of anemic obesity is entirely different from that of ordinary plethoric obesity and the diet cannot be so radically reduced. In anemic obesity there is an excess of water in the system and often a tendency to dropsical swellings. It is a good plan in such cases to restrict the total daily amount of water in the food to a minimum consistent with health—2 quarts for the average adult.

Sometimes only a quart of water a day is sufficient. The anemic fat person requires proportionately more meat, eggs, cheese, bread, rice, peas, and beans. He or she should reduce the quantity of water, sugar, fruit, green vegetables, and cereals to the minimum. It is better to eat light meals and tide over the awful chasms between with hot bouillon, a glass of milk, or a sandwich of scraped beef or chicken. Medical advice upon the condition of the heart should be had before attempting any exercises.

General Principles of Diet.—Fat in the body is not necessarily derived from fat in the food. All food is chemically broken down in the course of assimilation, and from its component elements the body builds up fat, muscle, or organic tissue as required. However, fats, sugar, and starches are more readily converted into fatty tissue.

Sugars and alcohol in very small quantities are fatsparers, that is, they are oxidized to furnish energy or heat, and the body fats are thus preserved. Hence the mere cutting out of excessive sweets or alcohol will restore certain cases of obesity to normal.

One good scheme of reducing weight is to eat only one kind of food at a meal, such as milk or green vegetables, or fruit, or meat. Not all the time, of course, but for, say, one meal a day, and vary the choice each day.

The obese should refrain from drinking quantities of cold water at meals because this stimulates appetite and increases digestive capacity. It is better to take a hot drink of some simple beverage or mild broth or hot water half an hour before meals.

Crisp bacon is the best form of fat to eat, and a little fat in the diet enables one to get along more comfortably without the fat-sparers. Exercise for Reduction of Weight.—It should be said here that no known medicine or diet or local application will bring about a special development of the bust, notwithstanding the scores of fake "bust developers" exploited through the advertising columns of the press. But special exercises will produce distinct local effects in the reduction of superfluous fat deposits.

For general reduction of weight the most effective exercise is walking in the open air. This must be carried on regularly, and the walks must be sufficiently long, not merely a few blocks. Provided the heart is not weak, at least four miles a day should be covered, rain, shine, snow, or blow. There is more health in this prescription than any other suggested in this book. If the heart is weak the walks must be graduated by the medical adviser. Indeed, graduated walks, especially up moderate grades, are a standard treatment for weak heart at Carlsbad and the Glen Springs, Watkins, N. Y.

Room gymnastics are more helpful for the reduction of excessive fat deposits about the hips, abdomen, back, or thighs. We cannot devote space to the methods, but would refer the interested reader to McKenzie's work on Exercise or Galbraith's Physical Training for Women.

Massage is of some value as an aid in the elimination of waste material in conjunction with exercise, but without exercise it will not reduce weight to any practical degree.

Dangerous Obesity Remedies.—The market is flooded with alleged obesity cures which are either plain fakes, disguised salts to physic the victim, or thyroid gland extract in one combination or another. The use of saline cathartics to reduce excessive weight is a dangerous and usually a futile expedient based upon unscientific

principles. As for thyroid extract, there are certain cases of overweight in which the administration of very carefully determined doses of this powerful agent produce nothing less than miraculous results, not only reducing weight but also improving the general strength, activating the dry skin, brightening the dull, drowsy mind, removing the heavy, stupid expression, and probably restoring functions long since all but absent; in fact, supplying just what is missing-thyroid gland secretion. But any one who experiments with this two-edged sword is likely to do irreparable harm. The United States Public Health Service found it necessary recently to issue a warning to the public against taking alleged antifat remedies containing thyroid extract. The fatoff fakes are in many cases positively dangerous and ought to be excluded from commerce.

CHAPTER XV

DISORDERS OF THE NERVOUS SYSTEM

EXPRESSING what we believe is a reflection of the authoritative opinion of today, it may be said that although the child acquires physical and mental attributes and tendencies from the parents, degeneracy, as the term is applied to the mind and morals, is rather a result of faulty education and environment than an inexorable stigma of heredity. It is all very well and no doubt impressive to serve up the remarkable history of criminality and immorality in the pedigree of an unfortunate Jukes family, and some enthusiastic ultra-eugenists would undoubtedly accept such a family history as sufficient to warrant artificial sterilization. But who dares say even an illegitimate Tukes would not attain to an even footing with the average man if rescued at birth and surrounded with the ordinary decencies of an American home?

So-called "neurotic" families are known to every practising physician. Members are prone to be unstable, irritable, peculiar, quarrelsome, to suffer with various functional or organic nervous troubles, and to resort to alcohol or drugs on slight pretext. We cannot avoid the conviction that some defect or weakness of nerve cell is handed down from parents to children, yet, at the same time, we do not always realize the profound influence of education and association upon the children of neurotic parents. For instance, what could be expected of a

child raised in a home where "soothing syrup" is an emergency remedy, where a little ale or whisky is the first resort as a general panacea, where bedtime is hours late, where an atmosphere of insincerity, jealousy, trickery, superstition, and guilty secrecy prevails?

Habits that Hurt Children.—The intelligent mother—let us say the trained nurse who becomes a mother—never finds it necessary to bounce or jiggle her baby on her knee, nor to rock him asleep, nor to keep a light burning in his bedroom, nor to guard him through a dark hall, nor to go and lie down beside him to coax him asleep. These are all habits deliberately taught by the mother who believes what the "old women" say. Not only do they make burdensome and unnecessary demands upon the mother, but they pave the way for other habits which will eventually make the child a neurotic. A baby needs none of these pandering attentions, but he will soon acquire an appetite for them.

In antenatal life conditions like worry and anxiety and fear which produce a physical effect upon the mother-to-be will naturally tend to affect the child's development, since the same nutrition and blood supplies mother and child. But there is no direct connection between the two nervous systems, and outside of actual physical influences prenatal "marking" is a purely mythical idea.

School Age.—Chronologic age and anatomic age do not necessarily coincide. An x-ray view of the bones of the wrist, for instance, will show that many a child of nine or ten years has the bone development usually expected in a child of six or seven. As a rule children are sent to school too early in life. Eight years should be the age at entrance, not seven, six, or even five. The

very young child is naturally injured by the long hours of restraint in the school-room, and teachers, being rarely mothers themselves, do not realize how unphysiologic and utterly wrong it is to force a child to sit prim and straight for long periods day after day. Unfortunately, too, a great many little tots suffer seriously from fear inspired by an unsympathetic teacher, principal, or the school-room itself. A good, loving mother naturally hates to see her baby start off for school, and well she might. We firmly believe an hour a day is ample for the education, and all that is safe for the health of the little ones in school up to the ninth year.

The Unhygienic School-room.—Right here it may be said that most of the so-called "children's diseases" as though children were more entitled to them than older persons—occur after the child enters school. In a great many cities we have medical school inspectors and nurses to watch and exclude suspected cases of contagious disease, but since these are usually part-time workers and political appointees at that, the job is done mostly on paper. Here and there a city government willingly expends sufficient funds to buy the services of competent physicians and nurses for medical school inspection, and it pays. Occasionally the authorities make a rule that any child with a running nose, a cough, or frequent sneezing shall be excluded from school until certified by a reputable physician. This is a regulation which should be enforced in every school-room for the benefit of the general health. It is in the incipient stage, before the child seems seriously ill, that measles, scarlet fever, whooping-cough, diphtheria, and all sorts of so-called "colds" are spread through the secretions from the nose and mouth.

Importance of Daily Recess.—The mid-forenoon recess and the mid-afternoon recess, in the anemic minds of some school principals, are a troublesome waste of time. It cannot be too emphatically stated that whoever would rob the school-child of this health-conserving advantage is not a good guardian for our public schools. When school authorities, for selfish or what they think economic reasons, omit the morning or afternoon recess parents should take a hand and make known their dissatisfaction.

The Obsolete Punishment, Staying After School.— A pretty sure test of an incompetent teacher is this—Does she punish pupils by making them stay after school? In the ancient A-B-C days, when mere freak memory and not mental ability was the aim and end of common-school education, this assault upon the health of the pupil may have been good form. Today it is the plain duty of parents to protest vigorously to the Board of Education if such practices are countenanced in the public school. A teacher who must resort to these tactics obviously fails in discipline, and if the health of the child is the supreme issue, as we think it is, such a teacher deserves no consideration from the people who employ her.

Performances and Precocity.—The precocious young one is always a sad sight for any one with the welfare of childhood at heart. Precocity is premature development of the nervous system. One way to encourage it is by coaxing the little ones to do their "stunts" for the delectation of visitors, to applaud the performance, and comment upon the wonder of it in the child's hearing. Another way is to permit the tender school-child to take part in entertainments for the public. Foolish parents imagine there is something to be proud of in these regret-

table performances. The child becomes unchildlike, sophisticated, self-conscious, precocious, nervous, and sometimes positively vicious. Boldness is the logical outcome of "pushing" children at home or in public. Boldness all too soon leads to deplorable activities of the smoldering sex instinct. This seems hard to say, but too true to omit. A precocious child is a child behaving as one several years his or her senior. It is for these reasons that we would discourage any public exhibitions of our children's accomplishments until they are past the age of puberty. Elocutionary efforts, we feel sure, should be strictly confined to the school-room itself.

The same principle applies in piano playing, singing, and, most of all, in dancing. Any one who differs ought to think back over his own childhood experiences and recall the paralyzing fear, the pride of accomplishment, and the priggish conceit which successively seized upon him at the time of his first phenomenal public appearance.

Night Study.—Certainly there is no sound reason why children under fifteen should bring home school-work to do at night, and it is our experience that even high-school pupils do as well or better in the long run without night study of school-books. Of course, children under twelve should be abed at 8 o'clock, and the short hour after the evening meal may be well spent in story reading, games, music, or play. In any case, the less night studying, the better. It is rather noticeable that young boys and girls who lug home an armful of books every night have frail bodies and "big heads" in more than one sense. A brilliant youth or maiden had better get the mind off declensions, equations, and reactions at night.

Puberty.—Ignorance and innocence are not synonymous terms, though the mawkish false modesty of parents

rests upon no other foundation. Rarely if ever does the boy or girl fail to absorb vicious ideas from companions before he or she attains the age of puberty, even when the ostrich-like blindness of parents makes them scout the veriest intimation that their loved ones could even understand such things. This is not the place to enter into the vital subject of sex hygiene, which is so wilfully and so grievously ignored in general education. It is a question requiring discussion in greater detail than we can devote to it here. But some way should be provided to impart to young children the plain truth, for evasion and concealment only invite morbid curiosity, and every physician knows the price paid for half-truths and misinformation by the younger generation. If parents do not wish to undertake the duty of instructing children in sex hygiene, then they should call upon others to whom they may entrust the education of children before the age of puberty. Our suggestion would be a woman doctor as instructor for girls and a man doctor as instructor for boys.

General Causes of Nervous Disorders.—Speaking broadly of the factors accountable for nervous diseases and insanity, we must include alcoholism, syphilis, various bacterial infections, poisoning by lead and arsenic, auto-intoxication and arterial degeneration—the relation between the circulation and the nervous system is very intimate. Such conditions as apoplexy ("stroke of paralysis," cerebral hemorrhage) are rather circulatory than nervous disease.

Worry, anxiety, jealousy, hatred, and fear, rather than overwork, we believe, are the real factors of nervous breakdown or nervous prostration, or, as it is now called, neurasthenia (neuro, nerve; a-sthenia, lack of strength).

Overwork and overstudy are the commonly accepted causes of various nervous conditions which, in reality, are due to emotional factors or excesses of one kind and another. A "nervous breakdown," like a "slight cold," is generally a mere name to appease the demand of the curious friends for information to which they have no right.

Neurasthenia.—Nervous prostration or neurasthenia is such an indefinite symptom-complex, so frequently a mere name for symptoms due to organic disease, but not clearly interpreted by the medical attendant, that there is little we can say about it. It is true that medical authorities write long chapters upon its symptomatology, diagnosis, and treatment, and neurologists have won fame by their success in the control of the multitudinous symptoms ascribed to nerve weakness. Nevertheless there is a growing opinion that "neurasthenia," outside of being a favorite complaint for the fashionables, is a title which will suffice until the actual underlying trouble becomes manifest. This is not to say that there is no such thing as nerve exhaustion from faulty mode of life. The intention is rather to emphasize the idea that nerve weakness should be conceived as a functional deficiency depending upon some underlying circulatory or organic cause unless it is proved otherwise.

Symptoms considered typical of neurasthenia are nervousness, irritability, backache, headache, fatigue from slight physical or mental effort, and various fears or phobias, especially the fear of insanity. Emotional disturbances, insomnia, "lump" in the stomach, heart "turning over," queer feelings in the limbs—patients are introspective and pay much attention to these and many other vague sensations.

The treatment is rest, change of scene, or occupation, or habits, mental hygiene, and suitable recreation. In severe cases the Wier Mitchell rest cure is useful. Certainly no particular drugs can be truthfully called "nerve tonics" and no food particularly feeds or builds up the nerves. If medicines are required they must be chosen according to the individual indications.

Infantile Paralysis, or Acute Poliomyelitis.—This disease is an infection, but as yet we do not know whether stable flies or human carriers spread the virus. It affects chiefly young children. The onset is usually mistaken for a "simple cold" or sore throat (the virus probably gains entrance through the nasal lining), but a few days or a week or more after the first symptoms appear the child shows some weakness or inability to use a limb, or a leg and an arm. There is more or less pain in the weakened muscles and perhaps a little fever. The weakness increases until the part affected is quite flaccid. Then for many months the condition remains unchanged.

By massage and electricity, which the mother may learn to apply herself, considerable restoration of the muscular control may be effected in the course of a year or two. If foot-drop remains it must be prevented by means of a suitable brace, in order to avoid permanent bony deformities as the child grows. In some cases when a single muscle group is paralyzed an operation—transplantation of tendons—may be very efficacious in restoring function. In any case patient, persistent endeavors to persuade the child to attempt movements, even though there is no muscle control, should be carried out, for remarkable benefit may reward such muscle-education exercise. Most of the persons one sees on the

street with "flail-foot"—loss of power to flex the foot in walking—are victims of infantile paralysis.

Neuritis.—Inflammation of a nerve itself is called neuritis. It is caused by infections, by toxins, by occupational lead- or arsenic-poisoning, by injury, by alcohol, and by pressure on the nerve from tumors, inflammatory swellings or exudates, callus, dislocated bones or crutches, or other external pressure.

One nerve or nerve plexus or many nerves may be involved. Acute multiple neuritis affecting all four extremities is sometimes seen in alcoholics and as a specific infectious condition. Facial neuritis (facial paralysis) may result from injury to the facial nerve by an operation on the ear or by middle-ear inflammation.

Symptoms of neuritis are pain in the course of the nerve, more or less loss of muscle control according to the severity of the inflammation, swelling and later glossiness and thinning of the skin over the course of the nerve, stiffness of joints from prolonged disuse, and more or less fever and general disturbance.

Mere pain is not neuritis, though some people make a fad of calling every pain that used to be just "rheumatism" neuritis. Neuralgia is a pain in a nerve without organic changes; neuritis is inflammation of a nerve with very distinct and prolonged organic changes. Neuralgia disappears entirely in hours or days; neuritis lasts months always. In neuritis the electric reactions are changed or lost. Not so in neuralgia.

In a general way the treatment for neuritis is rest of the affected part—a sling if an arm. Hot fomentations or hot-air baking will relieve the pain. Later in the course of the illness passive movements to prevent contractures and stiffening of joints. Diet, medication, and general hygiene must be adapted to the cause or causes at play.

Locomotor Ataxia.—This is a degeneration of certain of the nerve-paths in the spinal cord, caused in the great majority of cases by syphilis. Despite the various advertised remedies—the charlatans always yearn to cure the incurable—the best a patient can hope for is to delay or possibly stop the progress of the degeneration. A cure is an impossibility.

Early symptoms of locomotor ataxia or tabes dorsalis are sharp, shooting pains in the legs, or pains like "rheumatism," or a girdle sensation about the body, and numbness or tingling of the feet, or a sensation as if walking on feathers. In some cases failure of eyesight, difficulty in emptying the bladder, tendency to staggering or stumbling in the dark, and occasionally severe painful crises felt in the stomach and accompanied by vomiting and mistaken for "stomach trouble."

The diagnosis is made by noting that the pupils respond to accommodation—change size on looking at near then at far objects—but not to light; that the knee-jerk is weak or absent; that is, there is not the normal slight kick when the tendon below the knee is struck sharply; that the patient has difficulty in bringing the indexfingers of the extended arms together when the eyes are closed; that swaying or lack of balance is pronounced when the patient stands with feet together and eyes closed; that the patient has a peculiar swinging uncertain gait as if slightly intoxicated; and that there are areas of numbness or delayed sensation here or there upon the skin of the legs or body.

Microscopic examination of spinal fluid may aid in the diagnosis, and injection of salvarsanized serum or a similar antisyphilitic remedy into the spinal canal may be the most efficacious treatment.

Muscle-education exercises offer the best chance of restoring power to the limbs.

Epilepsy.—A disease of unknown origin, beginning in the great majority of cases in childhood, and notably frequent in the families of alcoholics. There may be a convulsion followed by loss of consciousness; or a mere transient loss of consciousness without any convulsive movements; or a localized spasmodic movement without loss of consciousness. The first is called grand mal; the second, petit mal; the last, Jacksonian epilepsy. Attacks like epilepsy developing in persons past thirty years are more probably due to brain abscess, brain tumor, syphilis, injury of the skull, or some brain lesion resulting from a former hemorrhage.

Convulsions in childhood occur as an equivalent of chills in adult life. Thus, a child is liable to have a sudden convulsion with the onset of an acute fever, where an adult would have a mere shivering chill. A child's nervous system is comparatively greater than an adult's in proportion to body weight. However, indigestion, rickets, and possibly a very tight foreskin—factors of convulsions in children—may predispose to the development of epilepsy in the child of alcoholic parents.

The major epileptic seizure (grand mal) is ushered in generally by an aura—a warning, such as a sense of something rising from the abdomen, a peculiar sensation in some particular part of the body, or a peculiar feeling in the head. The patient cries out or groans, falls, the head is held rigidly and the eyes turn to one side, the hands are clenched, and the legs extended. The face is at first pale, then livid. Soon convulsive movements be-

gin and last for only a short time. Then relaxation follows, the mouth froths, perhaps bleeds if the tongue has been bitten, and the breathing is noisy. The patient is now unconscious, but presently can be aroused, though he prefers to sleep, and usually has a headache. When he wakes he is apt to be confused and he does not recall what happened during the attack, and in rare cases an epileptic makes irresponsible attacks upon persons who happen to be near when a seizure comes on.

There is no treatment for an attack of epilepsy except to place a cork or other object between the teeth to protect the tongue and watch that the patient does not injure himself or others. Clothing about the throat or waist should be loosened if tight. Allow the patient to lie down. Do not try to restrain the jerking about.

In petit mal the victim may merely pause suddenly in speech or at table, perhaps drop what may be in his hand, seeming to forget himself for a moment, then resuming what he had been doing, quite unaware of the lapse. Some famous men and women have been victims of this strange condition.

The treatment of epilepsy is best carried out in an institution or colony. Education, general hygiene, and suitable occupation are the important points. As for drugs, while bromids may be employed temporarily, they do much harm if long continued. Practically every alleged epilepsy cure or cure for fits advertised in the mail-order magazines and the less respectable papers contains bromid as its active ingredient. When bromid is used it becomes a very nice problem for the doctor to decide how much and how long to administer it in order to gain any advantage over the fits without injuring the general health and making the epilepsy worse.

Certain cases of Jacksonian epilepsy—spasms limited to certain muscle groups without unconsciousness—may be greatly helped or cured by brain surgery.

Hysteria.—Men, women, and children suffer from hysteria. The disease is a psychic or mental one entirely. Some idea controls the body for the time being. In a great many cases the controlling idea is one which, perhaps, has been implanted in the subconscious mind in early life by a fright or other unpleasant emotional experience. The impression remains, though the conscious mind has succeeded in forgetting or repressing the idea. We naturally try to forget unpleasant experiences, but association may bring to the surface or revive an impression long forgotten. In hysteria, association arouses the repressed idea and places it temporarily in command, though the patient is not consciously aware of the process.

Modern psychologists can analyze the mind of a hysteric and, very frequently, bring to light the repressed idea accountable for the hysteric condition—be it a paralysis, a convulsion, an imitation of the noise or behavior of an animal, a strange cataleptic pose, or what not. Hysteria may mimic any disease. By tracing the connection between the long-forgotten unpleasant experience—which is generally of a sexual nature or at least possesses a sexual symbolism—the expert physician may be able to show the sufferer the influence of the repressed idea and enable her to regain complete self-control. This is known as psycho-analysis and catharsis, and is utilized by various neurologists with considerable success in obscure cases of hysteria.

Hysterics, as mere tantrums or "cutting-up" is called, should not be confused with genuine hysteria. A girl

is properly punished for a fit of temper, but no one should be punished or penalized in any way for hysteria. Such crude measures as a dash of cold water, the actual cautery, and the like can never help hysteria. It is certainly true, however, that a studied indifference and an air of confident assurance on the part of family and attendants is much better for the patient than a display of anxiety or concern.

Attacks of hysteria are generally brought on by emotional excitement or overwork, especially nervous or mental work.

St. Vitus' Dance or Chorea.—This is an acute infection of the spinal cord caused by bacteria which have entered the system through a sore throat. It is apt to complicate or follow quinsy, scarlet fever, or acute "rheumatic" fever, all primarily throat infections.

There are twitching and grimacing and involuntary movements of all the muscles, with considerable peevishness and irritability from fatigue and disturbed sleep. The disease runs a course of from a few weeks to many months or a year or longer. The child requires kindly management, tonic treatment, perhaps tepid packs when very nervous, a day or two in bed when the twitching is extreme, avoidance of excitement or study, plenty of outdoor air, and careful watching by the doctor lest the heart be affected. Sometimes electricity will be helpful, and perhaps a visit to a quiet place in the country or mountains will produce improvement. There are all sorts of superstitious and nonsensical remedies applied for St. Vitus' dance, and most anything will win undeserved fame if used at about the time nature is ready to restore health. The intelligence of parents is pretty well exhibited in the treatment they give a child with this condition.

Apoplexy or Stroke of Paralysis.—This is really not a nervous disease, but rather a blood-vessel disease. Apoplexy is one of the three conditions which are liable to overtake the victim of overeating or alcoholism, the other two being Bright's disease and degeneration of the heart muscle.

A stroke is caused by the rupture of an artery, usually a branch of the middle cerebral on the left side of the brain. The hemorrhage into the brain presses upon brain centers which control certain muscles, as those of the right arm and leg and those of speech, with the result that the victim loses control of the right side of the body and speech.

While the coma or unconsciousness of the stroke may deepen and terminate in death if a large hemorrhage occurs, there is temporary recovery as a general rule, and the paralysis, at first apparently complete, may prove only moderate after a few days. However much paralvsis may remain after the patient regains consciousness, which is generally a matter of several hours, the patient's future prospects will depend upon his own behavior very largely. Supposing there is no serious kidney or heart damage, but only the diseased arteries and high bloodpressure incident to the stroke, the patient may postpone the second stroke by an abstemious diet and the avoidance of exciting strains of all kinds. Unfortunately, many hemiplegics (one-sided paralytics) have an enormous appetite, although confined to a wheel-chair or the bed, and if they insist upon eating great amounts the inevitable second stroke will only come all too soon. A second stroke and even a third may be survived, but not as a rule.

Another form of stroke may occur in persons of any

age who have valvular heart disease, a fracture of a bone, or a large open wound (embolism). Embolism means that a minute fragment of diseased heart-valve or fat (broken bone) or bubble of air (large wound) or even blood-clot (inflamed vein in the leg) has entered the veins, passed through the lungs and heart, and lodged in one of the arteries of the brain. The stroke is sudden, without unconsciousness, and the paralysis is complete, or death follows in a few minutes.

Aphasia (Loss of Speech) and Amnesia (Loss of Memory).—When the motor speech center in the left side of the brain is damaged there is some defect or complete loss of the power to utter words. Other centers and connecting nerve-paths in the brain control the power to recognize written or printed words, to write words, and to know the meaning of words. Injuries of these centers or nerve-paths will produce various effects as suggested.

Amnesia is a condition in which memory for past events is defective or lost. It may be complete—the victim may forget his own name, his identity, his residence, everything; he may wander about aimlessly, or assume the first name any one pleases to apply to him, and perhaps recover his memory months or years later far from home. Arterial disease, kidney disease with uremic intoxication, and various cerebral diseases may cause amnesia. A case occurred in the writer's observation recently. An elderly man was arrested on the street as a suspicious character. He was jailed, and the jail physician found his health such as to require hospital treatment. At the hospital we diagnosed chronic interstitial nephritis with uremia. The man apparently could recall nothing of his past life. The police presently

"identified" him. They obtained photographs, measurements, and descriptions of a notorious "yeggman" from a western city, and our patient was that man. But we, in our obstinate way, insisted our patient was no "veggman." and we refused to allow the police to take him from the hospital. They intimated he was pulling the wool over our eyes. We sawed wood for a few days. Soon the patient improved under tepid moist packs and elimination; his mind began to brighten, and we handed him a geography text-book to amuse himself with. He studied it diligently for several days. One morning he pointed to a little village in the northern end of the state. "There's my old home," he declared. Meanwhile the police requested us to get him ready—they were sending the patrolwagon after him. We told them not to bother, we would let them know when the patient was to be discharged. The patient gave the names of the village tax collector, the justice of the peace, and others. We communicated with them. In a day or so the patient's brother arrived and satisfactorily identified the poor fellow. It developed that he had left his farm one morning under great anxiety and set out to visit the county clerk, to determine some important question involving a deed transfer. That was the last he or his friends knew of the man until he recovered in the hospital. We haven't the slightest doubt that many an unfortunate in a similar predicament suffers from police persecution.

Delirium Tremens.—Just as many victims of delirium tremens are killed by criminal negligence as by the disease itself. It is the fashion for the public and the police to diagnose a man's condition by the odor of his breath. Thus, a gentleman with Bright's disease was walking along the street when he felt a sudden faintness. Being

an imbiber he entered a saloon and took a drink or two of whisky. He started along on his way, but suddenly felt faint again, and this time staggered forward a few steps and fell on the sidewalk. A crowd gathered; somebody cracked some bad jokes about "the souse." Policeman grinned in his sophisticated way, tapped the victim's feet with his stick, summoned the police ambulance, and ran him off to the police station. There he was chucked in a cell to "sleep it off." He did. They found him dead in the morning. The postmortem investigation showed that the man had badly diseased kidneys and was subject to uremic poisoning, of which, indeed, he died—like an animal. Prompt treatment had helped him in several similar attacks, but, of course, the police noticed the odor of whisky on his breath this time.

Delirium often causes a man to wander about when coming down with pneumonia. Sometimes a uremic attack, from Bright's disease, is ushered in with wild delirium. That the patient happens to be drinking is no reason for denying him humane treatment. It ought to be a penal offense for a police officer to place a drunken man in a cell without medical advice. Too many preventable deaths occur in police stations. Every such case should bring forth a vigorous civil action for damages against the city.

Paralysis Agitans.—Elderly persons often develop a characteristic mask-like expression, a peculiar pill-rolling tremor of the fingers which can be temporarily stopped by voluntary effort, a forward stooping posture, and a gait in which the steps become shorter and faster until the person falls or catches something for support. This is called "paralysis agitans," and sometimes the poor unfortunates are accused of malingering in order to gain

sympathy or attention. Generally the victim has difficulty in washing the face and combing the hair. The only treatment we have ever used with any appreciable benefit is small doses of hyoscyamus, an antispasmodic remedy which may diminish the tremor and give the patient much better self-control.

Tics.—A tic is a habit spasm, such as shrugging the shoulders, clearing the throat, uttering strange little noises, blinking, winking, nodding, beckoning, and a thousand and one movements of the limbs or trunk. Imitation is a factor of tics in children. We have all heard of the unhappy fellow who had a tic which his friends gladly mistook for an invitation to come in and have a quiet one! And of the lady who couldn't help winking in the most embarrassing circumstances!

A course of special exercises, including inhibition and passive exercise under a good instructor, will overcome a tic in a few weeks as a rule.

The Spinal Cord.—Besides carrying sensory impulses from the skin, muscles, and joints to the brain, and motor impulses from the brain centers to the muscles, the spinal cord contains reflex motor centers which control certain automatic muscle functions, such as that of the bladder, the rectum, and the genital organs.

Injury or inflammation of the cord involves all sensory and motor functions below the level of the lesion excepting, perhaps, these automatic centers. *Myelitis* is inflammation of the spinal cord, occurring in acute form in persons from ten to forty years of age, due to some injury or hemorrhage or infection. Paralysis and loss of sensation in both legs is the result. If the patient survives the first four weeks there is a chance of partial or sometimes complete recovery of functions; but many cases drift into a

chronic state of paraplegia—paralysis or weakness of both legs.

The Value of a Hobby.—Every one ought to have some hobby, some avocation or diversion, quite apart from his vocation or business. Golf, tennis, fishing, hunting, photography, oriental rug study, coin and stamp collecting, tramping or gypsying, fiddling, sailing or motorboating or hydroplaning, raising chickens, skunks, snakes, or apples, collecting rare books, pictures, pottery or art works, collecting thumb-prints, autographs or fossils, some interesting means of recreation to absorb his spare time. A change of work is as good as a rest—better than a rest for the nervous individual. A hobby keeps one from becoming mossy and mean and sour. The greatest brain workers and the great masters of men always have some little hobby for their leisure hours.

Meningitis, or "Brain Fever."—The old-time novels would lead one to think that "brain fever" is a condition which the heroine develops under great stress of emotion or overstudy. It is, in reality, inflammation of the covering membranes of the brain, due in every instance to infection by a specific diplococcus, or by the pneumonia germ, or by the tubercle bacillus, or by ordinary pus cocci. The infection enters via the nasal lining in most cases, though perhaps from the lungs by way of the circulation in pneumonia.

Acute cerebrospinal meningitis is an epidemic disease. It is sometimes called "spotted fever" because of the purpuric or hemorrhagic rash that appears in the skin. Young children are most susceptible. Carriers probably distribute the germs; children or adults with running nose or "cold." The symptoms are a coryza or sore throat, fever, headache, somnolence, the rash, and

muscular contraction of the neck and the limbs. The eyes are staring or crossed, the pupils dilated, the whites prominent. The antimeningitis serum of Dr. Flexner (Rockefeller Institute, New York City) offers the greatest hope for the child. It is given directly into the spinal canal.

Tubercular meningitis presents similar symptoms, but more insidious in onset and not so pronounced as in epidemic meningitis. Treatment is of little avail. It should be the same as that of tuberculosis elsewhere. The baby usually goes into a state of inanition and succumbs after several months.

Hydrocephalus.—A gradual enlargement of a baby's head, with the accumulation of watery fluid in the ventricles or spaces of the brain and consequent mental deficiency. The child rarely lives more than two or three years. There is usually spasticity of the legs, crosseyes, and perhaps an occasional convulsion. The condition should not be confused with rickets, in which the head is rather square, but the fontanels do not bulge. In some instances surgery may offer a remedy for hydrocephalus.

Brain Tumor.—A tumor may grow in the brain at any age. Symptoms are intense headache, vertigo, insomnia, sudden inexplicable attacks of vomiting, sometimes fits or fainting spells, change of disposition, defects in eyesight, and sometimes a feeling of pressure or tightness in the head. If the eye examination shows "choked disk" or optic nerve involvement the diagnosis becomes clear. It may be possible to localize the growth by interpreting the patient's symptoms, and then there is a good chance of removing the tumor and curing the patient.

Brain Abscess.—This may develop insidiously months

or years after an injury to the skull; by extension of inflammation from the middle ear (running ear); or by the lodgment of septic particles in the brain from distant septic processes in the body. The symptoms are chills, irregular fever, vomiting, mental dulness, severe headache, and delirium. Slow pulse and optic nerve involvement are frequent symptoms. The only treatment is trephining and drainage of the abscess if it can be reached.

Insanity is a manifestation in language or conduct of disease or defect of the brain. The legal definition of insanity and the medical definition differ in this respect, that medically we recognize many borderland cases as insane which the courts would not declare insane. Legally a man is insane (1) if his mind, memory, or understanding is unsound; (2) if he commits some act whose nature and quality he does not know, or does not know whether it is right or wrong. No matter how clearly insane a man's conduct may be in the medical expert's observation, the astute lawyer may put that man on the stand and prove to the satisfaction of judge and jury that his mind is normal or even above normal in intelligence. Thus doctors and lawyers will never agree in court, and many an insane criminal goes free.

Hallucinations (seeing and hearing unreal things), illusions (erroneous conceptions of actual incidents or occurrences), morbid impulses, as kleptomania (stealing), pyromania (starting fires), dipsomania (drinking), and the like; sterotypy, the constant repetition of words or phrases or actions without definite aim or reason, delusions (false beliefs), obsessions (certain impulses or ideas which dominate the mind to an abnormal extent), and delirium constitute the symptoms of insanity.

The chief varieties of insanity are (1) manic-depressive insanity; (2) paranoia; (3) dementia præcox; (4) paresis ("softening of the brain"); (5) mania; (6) dementia, and (7) melancholia. These are largely arbitrary divisions. For instance, manic-depressive insanity is characterized by alternating mania or mental excitement and melancholia or mental depression, sometimes with intervening periods of mental health.

Paranoia is characterized by delusions of persecution, the patient believing that some one is trying to get him out of the way. He is very egotistic, suspicious, irritable, hypochondriac, dresses eccentrically, is timid, harbors peculiar phobias or fears, imagines himself some great personage, sometimes commits assaults or murders under an imperative conception, such as an order from God to avenge a fancied wrong. Monomaniacs are often victims of paranoia.

Dementia præcox comprises about one-fourth of all admissions to hospitals for the insane. It begins in early life, usually before the twenty-fifth year, but sometimes later. Defective heredity is a factor. In certain cases some form of auto-intoxication or a defect of the internal secretions from the ductless glands is believed to favor the development of the disease in a neurotic individual. Precocious piety, seclusiveness, impulsiveness, and moral instability are features in many cases. Peculiar movements of the head, brows, mouth, eyes, making faces, sniffing, or grunting may be noted. Prolonged periods of sadness and depression characterize some cases, and in others katatonic stupor or the ceaseless repetition of similar sounds, such as "marrying, carrying, harrying, parrying, farrying, tharrying, starrying" or "daisies, phasies, tasies, maisies," or the maintaining of

one position for prolonged periods. Recovery occurs in about 10 per cent. of the cases under hospital treatment.

Paresis or paralytic dementia ("softening of the brain") is syphilis of the nervous system. It is a progressive paralysis with progressive failure of the mind. The man neglects his business, enters upon wild financial schemes, commits disgraceful moral acts quite unlike his friends would expect from him, becomes intemperate, licentious, and extravagant. After a while a stage of exaltation follows, usually with delusions of grandeurthe patient generally believing himself possessed of fabulous wealth, millions of acres, thousands of friends; or he is the strongest man in the world, or the greatest artist, or the most famous magician. He "feels fine." Nothing whatever worries him. The physical symptoms are practically the same as those of locomotor ataxia. The disease progresses to absolute dementia or loss of all mental capacity, with weakness, ending in a bed-ridden state, and after a few years death. Salvarsan or some modification injected into the spinal canal stays the progress in some cases.

Senile dementia is the enfeeblement of mind in old persons. Forgetfulness and carelessness in the care of the person are the chief symptoms. Delusions may occur, the patient declaring he is being robbed or insulted or misused by his family. Attacks of delirium and excitement are not uncommon. Death usually occurs in three or four years.

Puerperal mania is a form of wild delirium developing in a woman soon after she has borne a child. It is probably a toxic condition. An identical delirium sometimes supervenes upon an operation, a severe shock, injury, or an acute fever in a neurotic individual. It is an extremely violent delirium, with dreadful hallucinations, high temperature, and rapid exhaustion from unceasing wakefulness and activity. But after a few days the patient will sink into a comatose state, from which recovery may occur if the patient has been intelligently treated in a suitable hospital or institution, but death is more likely.

Change of Life.—Among women or, at any rate, among "the old women" there is a tendency to attribute almost any mental or physical disturbance appearing after the age of thirty to "the change" or the menopause. We have seen Bright's disease, cancer, paranoia, fibroid tumor, and numerous functional conditions ignored or neglected by women until too late to obtain relief simply because their friends assured them that they had experienced the same difficulties at the change of life. It may be stated that a person's age in itself is never a factor of disease. The menopause, like puberty, is a normal physiologic epoch, and in the absence of definite local or general disease it never causes symptoms of any kind whatever; that is, the change of life should in nowise affect a woman's health. It is quite true that in both men and women at middle age cancer, Bright's disease, various degenerative conditions, and mental troubles are liable to begin. But "the change" is nothing but an old granny's superstition in so far as an influence upon mental or physical health is concerned.

CHAPTER XVI

THE THREE GREAT PLAGUES

Tuberculosis, cancer, and venereal disease destroy more lives than all other diseases added together. It is not possible to eliminate these plagues from civilized life, but it is possible to control them, as diphtheria and small-pox are controlled, by education and personal hygiene. It is beyond our present province to discuss the influence of sanitation and public health administration, for we are concerned here only with personal health and the means of preserving it.

TUBERCULOSIS

The Germans, who are conceded good authorities on tuberculosis, teach that the majority of us are infected with tubercle bacilli in infancy or childhood, the germs lodging in the lymph-nodes which drain the nose, throat, and intestines. Various tuberculin tests, such as the von Pirquet skin test, the Calmette ophthalmic or conjunctival (eye) test, prove that a great many adults harbor somewhere in the body a latent focus of tubercle bacilli; that is to say, a large share of us respond positively to these tests though we may be quite healthy, because there are living tubercle bacilli in a lymph-node deep in the neck or chest or abdomen; walled in and sequestered from the general system, to be sure, but nevertheless present. Now the generally accepted view

at this writing is that active tuberculosis of the lungs, bones, joints, or any of the organs is usually a mere lighting up of a latent focus or a reinforcement of the germ enemy by large and frequent reinfections from the outside world.

Dr. Lawrason Brown, whose long study of pulmonary tuberculosis in the Adirondacks and elsewhere enables him to speak with conviction, has stated that childhood is the time of infection and youth the time of superinfection and lighting-up of the tuberculosis focus.

Sources of Infection.—In infancy a commonly ignored source of infection with tubercle bacilli is ordinary market milk. Unless the milk is pasteurized, or the herd tuberculin-tested, or the dairy conducted as a certified milk dairy there is a strong probability that an infant fed on raw milk will become infected by bovine tuberculosis bacilli. Years ago there was a controversy upon the question of the susceptibility of humans to bovine tuberculosis, but there is no longer any doubt that glandular tuberculosis (scrofula) and perhaps all other tuberculous lesions in children are frequently caused by bovine tubercle bacilli.

Another source of infection in children is kissing. It should be considered an unnatural crime to kiss a baby or child upon the lips.

Still another source of infection is house dust. The baby creeps and plays about the floor and inhales a great deal of dust from various sources—dried sputum or particles of mucus thrown out in coughing or sneezing or conversation—and tubercle bacilli, as well as other disease germs, could well find their way into a child's mouth or lungs in this way.

A fourth source of infection is the intimate contact be-

tween parents or relatives and the baby. If any of these members of the family have tuberculosis, knowingly or unknowingly they may easily infect a child with no natural or acquired resistance to the disease. Indeed, it is only by virtue of a natural or acquired resistance that the child in a family where tuberculosis exists ever escapes infection.

Natural and Acquired Resistance to Tuberculosis.—
It is a well-known fact that germ diseases which we, for instance, consider exceedingly mild, like measles, may literally ravage a race of people infected for the first time. We inherit in the parent cell a factor of natural resistance to those germ diseases which our parents and their ancestors have suffered and survived. Certain races are more susceptible to tuberculosis than others. In this country the descendants of races probably free from the infection in past generations in their native lands are peculiarly vulnerable to the disease, notably negroes and, in a less degree, the Irish.

By "acquired resistance" we mean the resistance one has against small-pox after having survived one attack. Some germ diseases seem to confer no immunity by one attack, such as erysipelas or pneumonia; others undoubtedly do, such as whooping-cough, typhoid fever, or scarlet fever. Tuberculosis does stimulate resistance in a measurable degree, though not so actively as other infections. However, there is no doubt that small infections in infancy and childhood tend to raise the resistance against heavier infections (that is, infections by larger numbers or more virulent bacilli) in later life. Of course, many other conditions than the infection itself enter into the question of resistance to tuberculosis. We shall mention these conditions.

Factors that Favor the Development of Tuberculosis.—Poverty is the one universal factor of tuberculosis. If some of our public philanthropists would turn the money now being paid to campaign workers into the workingman's pay envelope, whence it has been filched in the first place, some progress might be made against tuberculosis as the "great white plague." Mr. Henry Ford is doing real work against tuberculosis by paying labor a fair fraction of what it is worth. We haven't the data as yet, but we dare say that great captain of industry who voluntarily pays his employees a living wage is doing far more to stamp out or control tuberculosis than that money king who has wrung the lives of his slaves for the unholy profits he now devotes to the propagation of public health.

Poverty, of course, means crowding in poorly ventilated living quarters, inadequate food, insufficient sunshine, alcoholism, filth, flies, close contact with the sick, and personal neglect. These secondary factors must be included in the list of causes predisposing to tuberculosis.

Onset of Tuberculosis.—There are several modes of onset more or less frequent in the history of pulmonary tuberculosis or consumption. Here are the familiar ones: (1) By an attack of acute bronchitis; (2) with symptoms of dyspepsia or stomach trouble; (3) with dry pleurisy or pleurisy with effusion (fluid collecting in the pleural cavity); (4) with general "run-down condition" without localizing signs or symptoms which would call the patient's attention to the lungs; (5) with hemorrhage or bleeding from the lungs (a few mouthfuls of blood are coughed up); (6) onset with symptoms like malaria (chill, fever, sweating); (7) with huskiness of the voice, pain on swallowing, and harsh frequent cough—symptoms which

may precede the lung involvement by months; (8) onset with slight afternoon fever or flushed feeling, perhaps slight headache, fatigue, shortness of breath, and loss of appetite.

Cough and Consumption.—The frequency, severity, triviality, or seeming depth of a cough is no criterion one way or another so far as tuberculosis is concerned. Active and even advanced tuberculosis may be present without noticeable cough, and a very fearsome cough may be caused by a trifling condition in the nose, throat, or ear.

The popular idea that "colds" and "coughs" will "run into consumption" if not doped with medicine is fostered by the fake medicine manufacturers as a good way to scare people into taking their nostrums. If tuberculosis is developing it is developing, cough or no cough, and no medicine can alter the truth. Much as we dislike to hurt the trade or to shake the possible confidence of a patient in a physician, it is necessary to say positively that one disease never "runs into" or changes into or develops into another disease of different character. It may be that some diagnoses or, rather, near-diagnoses possess this remarkable capacity of mutation, but whatever the flexibility of the diagnosis; the disease either is or isn't tuberculosis from the week or month preceding the first noticed symptom.

How to Find Out Whether You Have It.—There is still an occasional physician who pretends to diagnose conditions within the chest by placing his sensitive ear for a moment on the patient's vest or shirtwaist, shutting his eyes, and saying a sort of silent "eenie-meenie-minie-mo" while deciding whether to report a "weak spot in one apex," or a "slight catarrhal condition," or "lungs as

sound as a drum." But for the benefit of the patient we wish to define here the indispensable requirements for a correct diagnosis.

The patient must remove all clothing down to the waistline. The examination must usually be repeated several times upon different days. The patient's temperature must be observed and recorded several times a day over a period of several days. If any material is expectorated it must be examined by the doctor under the microscope. If there is no expectoration, perhaps an effort should be made to stimulate expectoration by means of a few doses of an expectorant.

In a series of cases eventually admitted to a sanatorium for treatment one or several of these essentials of early diagnosis had been neglected by the doctor first consulted in practically every case. And in general practice it is a common experience to meet with well-established tuberculosis of the lungs which has been overlooked for months simply because the physician in charge has failed to make a careful or complete examination. The physician thus at fault may plead as extenuation that the patient objected to an examination of the bared chest—there are women so besmirched of thought as to consider it immodest to submit to such an examination!—or the doctor did not wish to alarm the patient, or he was too busy to make a complete examination at the first interview, and the patient failed to return when directed, or he detected signs of infiltration in one apex and warned the patient that the trouble would bear watching, but did not state frankly that he believed it was tuberculosis.

Incipient Tuberculosis Usually Can Be Cured.—The importance of recognizing a case of tuberculosis while it is still "incipient"—that is, before lung tissue is "infil-

trated" or consolidated, and usually before any tubercle bacilli are expectorated—lies in the fact that nine-tenths of the cases placed under proper treatment in the incipient stage recover. Even those incipient cases admitted to a great sanatorium are pronounced "arrested" in about 80 per cent. after a year or so, and, of course, the well-to-do patient under home treatment stands a better chance of overcoming the disease.

Once Tubercular Always Tubercular.—There is no use trying to dodge that fact. "Arrested" means that the lungs have cleared up, all signs of lung disease have vanished, and the general symptoms have disappeared, the patient is free from active tuberculosis and will remain so as long as he lives right. Let him go back to the old vicious habits—bad air, improper food, dress, hours of rest, and recreation—and his latent tuberculosis will soon light up again.

The Essentials of Cure.—If asked to state what management offers the best chances for a case of tuberculosis incipient or other, we would name these essentials in the order of their importance: (1) A good physician who will see the patient at least once a week and oftener when he thinks necessary. (2) Open-air life night and day the year round, with as much sunshine as the patient can profitably endure. (3) Plenty of fresh, nourishing, wellcooked and attractively served food, including milk, eggs, and fruits. (4) Rest when the temperature is at any time of day above 100° F. by mouth. Carefully supervised exercise when the temperature is below 100° F. and the patient's condition warrants it. As a therapeutic measure exercise is comparable to tuberculin. (5) Tuberculin injections. (6) Avoidance of all cough mixtures and tonics, and dependence upon such safe and simple remedies as the physician may from time to time prescribe to meet temporary symptoms.

The Porch Bedroom.—This modern metamorphosis of the night-air bogy of our grandparents' time is, in our opinion, the most powerful single preventive against tuberculosis, pneumonia, and, in fact, all the respiratory infections. It should face the south, and have a full outfit of screens for summer use and awnings or curtains to break the winter winds. A dressing-room should open upon the porch bedroom, so that the occupant may dress and undress in comfort. Special sleeping-robes, sleeping-hood, and a bed made in such a manner as to exclude wind and cold are necessary. porch sleeping arrangements should accommodate every member of the household, being as healthful for the baby as for grandma herself. No home should be erected without ample sleeping-porches. It has now become an old story that families adopting this hygienic improvement soon grow enthusiastic over their newly acquired immunity against "colds." Now and then one does meet a patient who declares he or she "takes cold" every time the porch-sleeping stunt is attempted—pretty good evidence of some chronic nasal trouble needing treatment, not of any real harm from "exposure." In the porch bedroom, as in every kind of outdoor life, the one rule of safety is physical comfort. If the occupant feels comfortable only benefit can come of outdoor sleeping.

Such extravagant "medicines" as cod-liver oil emulsion, alleged extracts of cod-liver oil, alteratives (so-called) containing lime (which is useless in the treatment of tuberculosis) should be religiously avoided. Sundry piratical usurpations of the name of Koch—Koch, by the way, discovered the bacillus of tuberculosis, but never

even pretended to know of a cure for the disease—and alleged germicidal inhalations are deadly poison.

General Tuberculosis.—Tuberculosis may involve any part of the body. In childhood the lymph-nodes and the bones are more liable to tuberculosis. "Scrofula" is the older name for tuberculosis of the lymph-nodes or "glands" in the neck. The infection probably enters via the tonsils, decayed teeth, or catarrhal lesions in the nose. The condition requires identically the same outdoor life and general treatment that has proved best for lung tuberculosis. Surgery should be avoided by all means. If a node suppurates, it may demand drainage, but this is to be considered a calamity. Surgery has failed dismally in the treatment of this form of tuberculosis, and outdoor life, rest, good food and tonic treatment, especially sunbathing, has produced the happiest results.

Tuberculosis of the hip or other joints occurs in children. Apparatus to immobilize the diseased joint and outdoor life offer the best chance of cure. The same applies to bone tuberculosis. If an abscess develops in either condition it should be treated expectantly, perhaps aspirated with the needle, not incised, and injected with bismuth paste or some mildly antiseptic inabsorbable material. Sinuses, or openings down to bone or joint, discharging fluid through a prolonged period, are often curable by sun-baths or by bismuth-paste treatment by the doctor, or by surgical removal of dead bone at the bottom of the sinus.

Tuberculosis of the spine is "Pott's disease." It first causes continuous pain either in the back or referred to the stomach—"stomachache" without apparent cause. The child is apt to wake at night crying out with pain, as in the case of tuberculosis of the joints elsewhere. At

first there is no evident abnormality about the spine except an undue rigidity in movements of the part of the spine involved, but after many weeks or months a local swelling, soreness, or hump may develop. Supporting apparatus of one kind or another is essential, and the same general treatment given pulmonary tuberculosis should be applied.

Tuberculosis of the skin and mucous membranes is called "lupus." It commonly appears upon the cheeks, about the eyes and nose, and perhaps in the mouth or throat. The scalp and other parts of the body may be involved. It is often maltreated as "eczema." In fact, the patient's diagnosis or the mail-order diagnosis of "eczema" is deplorably wrong in fully half of the cases so diagnosed. The Finsen light-treatment, or a modification thereof, offers the best chance of curing lupus. Sunlight intelligently applied will cure mild cases.

Infectiousness of Tuberculosis.—The worst result of the recent campaign against the "white plague"—so dubbed by non-medical social workers—is the unreasonable fear instilled into the minds of the people. A case of tuberculosis in the community is probably less dangerous than a case of pneumonia, yet most people have little fear of catching pneumonia. Of course, a careless or ignorant person with either disease, or careless or ignorant attendants will subject those in the same building to needless risks of infection. But under ordinarily decent, intelligent care the victim of tuberculosis or pneumonia is utterly harmless to those who live near. A nurse or doctor, or, in fact, any one in intimate contact with the patient day after day, must realize and avoid direct infection by spray thrown out by the patient in coughing, sneezing, or loud speaking; and also avoid the conveyance of spray-contaminated or saliva-contaminated material to the mouth on the fingers by frequent soap-and-water washing. Otherwise it is quite safe to associate with a consumptive. In sanatoria infection is rarely if ever known to occur. Hence we say there is no sound reason for fearing the disease, nor is there a bit of sense in "fumigating" or renovating after the removal or death of a clean consumptive. Even the apartments of an unclean and ignorant consumptive may be made absolutely safe by plain soap-and-water scrubbing and thorough ventilation and sunning.

CANCER

The cause of cancer, which destroys half as many lives as tuberculosis, is unknown. Prolonged local irritation from one thing or another is an apparent factor. Pipesmoker's cancer of the lip, cigar smoker's cancer of the throat, cancer of the uterus in women who have borne many children (there is always some laceration of the neck of the womb in childbirth, and the scar is a favorite site for cancer), and cancer of the stomach in persons who have had ulcer of the stomach—these are familiar instances of the effect of chronic irritation.

Cancer is probably a group of different diseases of malignant character. We know that skin cancer (epithelioma) is only slightly malignant in comparison with stomach cancer or cancer of the womb (carcinoma). People may develop a small skin cancer on the cheek or the lip and live for years before the condition becomes at all alarming. But the internal cancers are fatal in a period of months or a year or two at the longest. Sarcoma is the most rapidly poisonous of all cancers, often causing death in a few weeks.

Skin Cancers.—A favorite site for epithelioma is the cheek just under the eye, the eyelid, or the lip. At first there may be a mere "wart" or minute pimple or sore which never quite heals or bleeds readily when injured. After many months or years this begins to increase in size and, if neglected, finally ulcerates and becomes malignant; that is to say, fills the blood with cancer poison which ultimately destroys life. Any chronic wart or pimple or blemish of this sort about the face should be removed under cocain—a painless, trifling, safe little operation which leaves no disfiguring scar and causes no after-trouble. If there is any suspicion of cancer the site should be given a few x-ray exposures to destroy any possible seed cells or cancer tissue remaining. Attempts to remove these lesions or small cancers by means of secret pastes or other medicines, or by anything short of the knife in skilled hands, are generally disastrous and needlessly painful even when successful. It is curious how people will suffer agonies under some crude "Indian" or "cancer doctor's" torturous caustics rather than have the lesion cleanly and painlessly removed by the home doctor.

Cancer of Stomach.—This is perhaps the most frequent site of cancer. It occurs in persons around middle age as a rule, though sometimes in young individuals. There is usually a prolonged period of "stomach trouble" or dyspepsia, and in many cases signs of gastric ulcer for years before cancer develops. The symptoms suggesting cancer of the stomach are: Loss of strength or weight, with pain about the stomach, attacks of vomiting, and sometimes the appearance of blood or "coffee-grounds" in the vomited material. The diagnosis must be made by analysis of the gastric juice (test-meal and stomach-

tube) in conjunction with consideration of the symptoms. The only chance of saving the patient is immediate surgery. A month's delay commonly proves the straw that turns the scale against recovery.

Cancer of the Womb.—This occurs in mothers of many children when they approach or pass the menopause or change of life. Nine times out of ten the victim imagines her symptoms are due to the change of life, and her women friends will assure her they had the same trouble. Any woman of forty or more years who has borne children and enjoyed good health for years should go at once to her doctor and be examined if she notices any of the following symptoms which suggest the possibility of cancer: Unusual amount of flowing at or between the periods; appearance of any discharge of different character from that noticed in the past; any unusual odor; reappearance of an apparent menstrual flow after the menses have ceased for some time; pain which persists over a period of weeks. There is an unfortunate and shameful tendency on the part of women of false modesty to hesitate about seeking an examination under these and similar circumstances. A truly modest woman feels no such shame. There is nothing more difficult or embarrassing for a physician than the duty of examining a woman who displays undue sensitiveness about such an examination. He can only feel contempt for the type of woman whose mind is so unclean. Perhaps the nasty insinuations injected into female complaint advertisements-in which woman's "delicacy" and modesty are played upon, that she may write to the dead "doctor" or the male "sister" and have her personal troubles considered by a stenographer or office boy-perhaps this sort of advertising influences some women. It certainly seems to be the uncultured

woman who makes the greatest to-do and embarrasses all concerned when such examinations have to be made.

Sarcoma.—This is the most malignant type of cancer. It occurs in persons of any age, from infancy upward. It occurs any place—in bone, muscle, skin, mucous membrane, abdominal cavity, lung, brain—and spreads by metastasis; that is, minute fragments break off and enter the circulation, to be deposited at some distant place in the body and start a new cancer. Epithelioma and carcinoma occasionally do so too, but as a rule these forms spread through the lymphatics to the immediate neighborhood only. If sarcoma is recognized and promptly removed before metastasis has occurred the patient is cured. A rapidly increasing lump or swelling following any injury should always be considered suspicious.

Cancer of the Breast.—Carcinoma of the breast may occur in men or women. It is most commonly observed in women of thirty-five to forty-five years. It begins as a mere lump or hardened spot which may be painless and perhaps discovered only by accident. Any such lump or unusual spot noticed in the breast should be at once examined by the family physician. If there is any doubt about the diagnosis the safe plan is to have the small lump removed. If it is cancer, the early operation is life-saving; if it proves non-malignant on microscopic examination, no harm has been done by removing it, because it might eventually become malignant.

The Stitch in Time.—Let us here state that in our opinion the woman who procrastinates while "trying" such conscienceless nostrums as the "female tonics" and alleged "womb remedies," and others of the same treacherous class deserves little sympathy when eventually bitter disappointment comes. Nowadays ignorance is

inexcusable. If there is a scientific fact clearly established by general experience it is this: The best, and in most cases the only, chance for the victim of any form of cancer is early operation, and every alleged cancer "cure" or remedy offered in lieu of early operation is in itself dangerous to life or, by encouraging delay, fatal to the best interests of the patient. This being absolutely true, if the United States Government were not in fear of the moneyed interests backing such cruel nostrums no paper or other publication advertising or exploiting an alleged cancer remedy would be admitted to the mails.

THE BLACK PERIL

The venereal diseases are sometimes called "the black plague." We realize what a dreadful prevalence these life-destroying infections have attained among the guilty and the innocent alike, but we are convinced that, bad as it is, the venereal question is not nearly so important, does not concern nearly so many innocent members of the community, as do tuberculosis and cancer. So we refer to it as the black peril, which it is for every devoted parent in the land.

It is very regrettable that these conditions cannot be freely and frankly discussed in a work of this kind. Indeed, it seems shameful that in this enlightened age our children should be permitted to grow up ignorant or maliciously educated concerning the very fountain of life and the ruinous dangers that beset them everywhere.

Our interest in the black peril here extends only to the innocent victims. We shall leave the guilty offenders to discover the light elsewhere. But surely it is our duty to teach the truth to the innocent victims of this terrible affliction.

First, the Newborn Baby.—In New York State and elsewhere the birth certificate contains a line upon which the doctor or whoever files the certificate must answer these questions: "What preventive for ophthalmia neonatorum did you use? If none, state the reason therefor." Now, ophthalmia neonatorum means inflammation of the eyes of the newborn, and in the great majority of cases it can be prevented by the simple expedient of dropping a drop of 1 per cent. silver nitrate or some similar silver solution into each eye immediately after birth. Of course, many babies have simple sore eyes from carelessness in washing, but sore eyes developing soon after birth, especially if pus (matter) forms, should always be looked upon as possibly gonorrheal, the baby being infected in the mother's birth-canal, and the mother, usually, being quite innocent of the fact that she is so diseased. The sad truth is that a great many young mothers are innocently infected by their husbands, who may have married years after they believed themselves cured of the original infection.

Next, the Wife and Future Mother.—Probably more than half of all the operations done upon young mothers are rendered necessary by gonorrheal infection contracted from the husband. It seems that a good many young men still deem it indispensable to sow their wild oats before they settle down and marry. The double standard of morality still holds a certain sway and is even defended by a certain class of medical men. At any rate, a disgraceful number of marriages are nothing but the beginning of a life-long invalidism for the unfortunate brides who take the sacred vow for better or for worse, never dreaming what that worse may be. We shall not attempt to give a lecture upon the physiologic health-

fulness and wisdom of continence, nor to utter any moral precepts about a man's duty to the future mother of his children. All we shall suggest is this: It is somebody's stern duty to exact from the suitor of a young woman a certificate of health from a competent physician, and before the engagement is announced. The father or mother or guardian who fails in this must assume part of the responsibility for any future unhappiness there may be in store for the young woman. The bridegroom nowadays ought to come armed with his health certificate; the suitor owes it to her whose hand he seeks to obtain a health certificate before contracting an engagement to marriage. We trust this is stated clearly and emphatically enough to make a permanent impression upon the mind of every reader. No marriage ought to occur without the bridegroom's health certificate. The young man's character does not enter into the question at all. Any guardian who omits to act on the ground that the young man is above suspicion does wrong, we care not who or what the young man may be.

Then, the Many Innocents.—Children in wards or schools or hospitals or institutions of any kind are sometimes infected with gonorrhea in a perfectly innocent manner, an epidemic passing through the group just as an epidemic of any other infectious disease might spread through ordinary contact. Young women are sometimes infected with syphilis by the act of kissing. For instance, in Philadelphia a few years ago a young man with syphilitic disease attended a party where the game of post-office was indulged in, and a few weeks afterward a large number of girls who had been kissed by this clean-looking, one-of-the-best-families young man developed syphilitic chancres of the lip. Men who are so careless as

to exchange pipes sometimes acquire syphilis of the lip by smoking the pipe of a man diseased, but not evidently so. In fact, there are a great many people innocently infected with these serious and well-nigh incurable diseases.

Last, the Unborn Children.—Most pitiable of all is the hereditary syphilis which awaits the unborn child. Congenital syphilis appears so frequently, and in the most respectable families, that there is no other position a doctor can honestly take but to assume all men possibly guilty until proved innocent. By this we mean that even a doctor's suspicious mind is shocked by his daily discoveries, until in time he is not surprised to discover syphilis anywhere. The biblical allusion leads to the belief that syphilis may be inherited beyond the first generation. If this is so it is, at any rate, a rare occurrence. The fact seems to be that few congenitally syphilitic children ever reach maturity, and if they do marry they are liable to be childless. This is sometimes · referred to as the one feature which makes syphilis a lesser evil than gonorrhea—syphilis is very likely to render its victim sterile, or if children are born they do not long survive. Gonorrhea, too, renders both men and women sterile in a great many instances, but if the child is born and the eyes saved as above described there is no hereditary taint to blight its life.

Besides syphilis and gonorrhea there is a third venereal infection called **chancroid**, venereal ulcers, which, when healed locally, leave no after-effects whatever. While chancroid may be an extremely severe and sometimes disastrous affliction in its local manifestations, it is almost always readily curable and does not impair the victim's future health. Gonorrhea is only curable if

intelligently treated from the outset by a competent and trustworthy physician, and not by a drug clerk, a barber, or a self-commended "specialist." Under the most favorable circumstances three months would be the least time in which a cure could be anticipated. In practice, when the patient is not faithful in following instructions, or when maltreatment is had from the outset, the disease is prone to become chronic and sometimes incurable. Syphilis can only be cured by a course of treatment extending over at least two years. Salvarsan ("606") is by no means a specific, though a good remedy in certain cases.

CHAPTER XVII

THE INSIDE OF THE CHEST, COUGH, AND THE ART OF GUESSING

WHEN the writer was a freshman medical student, and a very young one at that, there was one human, perhaps we should say humane, being who stoutly maintained her faith in him. It seems that grandma had lost a lung in her younger days—the doctors told her she had only one lung left—and when the writer tried his new stethoscope and heard no sound on the side over the missing lung (nor on the other side either, but this he never mentioned) grandma knew he knew as much as he'd ever know—at least that was the way she put it!

The inside of the chest, we suppose, is the most mysterious region of the body. At least it is most misunderstood. Let the average individual have a cough which makes the muscles of his chest and sides sore, and he will pretty certainly arrive at the conclusion that his bronchial tubes are inflamed and that he needs some medicine therefor. Possibly the cause of his cough is a plug of hardened wax in the ear canal, a trifling irritation of the larynx, or a polyp or other source of irritation in the nose; but, no matter, he can't be contented until he tries a cough mixture of some kind. This habit has been part of his education; it was part of his parents' education, through the almanac and the proprietary medicine circular; it was instilled into their parents in the beginning by the old-time family doctor. Two or three generations

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ago it was considered good practice to prescribe empirically; that is, to give a medicine for hard cough just because some one else with hard cough seemed to have improved while taking it, a coincidence perhaps without relation to the different causes of hard cough in the two cases. And so the old practitioners came to have their pet formulas for cough, colic, headache, fever, loss of appetite, run-down condition, and similar symptoms, formulas which happened to be suitable or efficacious in one or a score of the different conditions accountable for the same symptom in different cases. If old Doctor Jones worked up a "run" on his cough mixture, by luck or circumstance, then "Dr. Jones' Expectorant" became popular, and some keen merchant seized upon the formula or something as nearly akin to it as he could concoct and placed it on the market as a great discovery for coughs, colds, coryza, catarrh, consumption, bronchial troubles, and whatever other ailments he could think of. Then, by the liberal and persistent use of printers' ink and the kindly help of the daily newspaper-which probably needed the money and could not afford to be too particular about the character of advertising matter-"Old Doctor Jones' Expectorant" became a household phrase, and people thought of it automatically in association with cough. In this way the morphin-laden white pine syrup compound and numerous other cough mixtures which, excepting for narcotic ingredients, are worthless or harmful for promiscuous use.

Are we doctors at all at fault in this matter? Indeed we are, or at least an embarrassing number of us are. In this way: A friend of the writer's had in his office a large jugful of a most fearsome cough mixture, containing about a dozen more or less worthless drugs plus a generous dose of codein and heroin to the teaspoonful. We appealed to his reason, and demanded to know what possible purpose, salutary or ulterior, the two derivatives of opium could serve in a single dose. What possible effect could be sought from such a combination other than codein or heroin alone might produce? The doctor's explanation was characteristic of the greatest abuse of modern medical practice. He said he didn't know why the two opium derivatives were in the formula, that the manufacturers probably had some reason for including them. All he knew was that patients liked the stuff and came back after more! Now this doctor was by no means an inferior man; he was quite up to the average in his community, but nevertheless he was treating disease according to the proprietary medicine manufacturers' idea and not according to his own, for which the patients were presumably paying him. A good many proprietary or ready-made medicines prescribed by doctors who are none too particular about the treatment of disease are in themselves harmless or utterly without effect, but none the less objectionable on that account, for a patient consults a doctor and pays his fee for the doctor's opinion and advice, not for the free-for-all, hand-me-down nostrum of some high-class drug manufacturing house.

Cough remedies change with the seasons, like ladies' hats. The enterprising supply houses canvass the proprietary prescribing doctors of the community regularly each season with their very latest style of cough mixture, and the doctors who entertain the house representatives "stock up" with the stuff in anticipation of the "cough and cold season." Thus armed, and with a concoction which is good for almost anything inside of the chest or

outside of it, if you believe all you read on labels, the doctor is prepared to do a rushing business—"rushing" is the word, since he hasn't time to examine the entire naked chest fore and aft. Even if he has the time, what's the use? The cough medicine will be the same in any case, and besides, lots of patients don't like to undress for an examination when they have "nothing but a little cough."

Laryngitis.—Cooling off and returning to our proper subject, among the frequent causes of cough is acute laryngitis. This is an infection, like coryza, and so far as we are aware there is no particular predisposing cause unless it be overuse of the voice or mouth-breathing. Anyway, it causes a most irritating and disturbing cough, comparable to the effect of a bit of food going down "the wrong way," which persists often for many weeks and worries the patient a great deal. The voice is husky or for a few days altogether lost, and there may be considerable fever and chilliness at the onset of the laryngitis.

Cold compresses upon the throat are helpful, as is an occasional painting with tincture of iodin diluted with 2 to 4 or more parts of grain alcohol. To soothe the irritated lining of the larynx inhalations of steam impregnated with benzoin are useful. Put a tablespoonful of compound tincture of benzoin in a basin or pitcher of boiling hot water, and inhale the vapor through the open mouth, holding a cone-shaped paper or towel about the basin and the nose and mouth. This may be repeated several times a day. While narcotics are justifiable in cough medicine for laryngitis if they are ever justifiable, we believe better results are obtained in the long run by avoiding them. One useful agent to loosen and relieve the cough is chlorid of ammonium, which may be taken

in doses of 3 to 5 grains every two hours, dissolved in adjuvant elixer (National Formulary). Large amounts of lemonade, preferably hot, also help to ease the cough. Sweating is necessary.

In any case of laryngitis or cough accompanied by hoarseness or huskiness of the voice rest of the voice is essential. Utter no word when a sign or silence will suffice. Also, it is well to make sure the condition is not a complication or precursor of tuberculosis.

Chronic Laryngitis.—Exposure to smoke, dusty air, foul air, chronic catarrh of the nost or throat, adenoids, enlarged tonsils, thickened turbinates, tuberculosis, syphilis, cancer—any of these may cause laryngitis of chronic or long-continued type. Loss of voice without laryngitis is observed in hysteria, in paralysis of the vocal cords from injury or pressure upon the nerves supplying the larynx, especially by aneurysm of the aorta. The treatment of these conditions is obviously the treatment or removal of the cause. Local applications may be made by the physician to aid in the cure.

Acute Bronchitis.—This is probably what most people mean when they say they think they have a "cold on the chest." It is an infection of the bronchial tubes by the same sundry bacteria that cause coryza, tonsillitis, laryngitis, and simple sore throat—prominently the pneumococcus (pneumonia germ), various micrococci, staphylococci, streptococci, and just plain cocci—until you can cock your eye no longer.

The disease is most frequent during the seasons when people are most confined indoors. There is no reason to believe that those who expose the neck and chest by their manner of dress are more susceptible than those who do not. But it does seem that those who coddle the throat and chest, wearing additional layers of clothing, are more susceptible to bronchial inflammation. Children and the aged are more susceptible than young adults—the children being unduly housed up because parents fear they may "take cold," and the aged sticking close to the fire because they have a poor circulation and so suffer discomfort from cold weather.

Measles and typhoid fever usually have more or less bronchitis accompanying the onset.

An attack begins with chilly sensations and short dry cough which produces soreness under the breast bone. The temperature rises a few degrees and there is more or less oppression and rapid breathing. After a few days the cough loosens somewhat and a mucopurulent sputum is expectorated. At first the doctor hears nothing definite over the chest, but after a few days the stethoscope elicits all sorts of whistling, wheezing sounds, which the patient himself may be conscious of.

The treatment is rest in bed, liquid diet for a day or two, then light general diet, large drinks of hot lemonade or other hot liquids, a hot mustard foot-bath—if a child a hot mustard full bath—a mustard paste upon the chest (1 part mustard flour to 4 parts wheat flour made in a paste with cold water and applied between layers of muslin), to be removed when the skin becomes moderately reddened. Never apply mustard to a child's skin; instead, rub the chest with freshly prepared camphorated oil two or three times a day. The older practitioners advocated the application of a jacket of cotton lined with muslin and covered outside with oiled silk, but we believe this really prolongs the trouble. As for medicines, the patient is always ill enough to need a doctor. We need only add that large quantities of liquid

drink will do as much or more than most medicines for the cough. All expectoration should be burned.

Chronic Bronchitis.—Persons coming to the doctor with a history of chronic bronchitis generally prove to be suffering with one of the following conditions: Tuberculosis, Bright's disease, valvular heart trouble, bronchiectasis, emphysema of the lungs, pneumonokoniosis, or pleurisy. Hence, every such patient requires a very painstaking examination, including blood-pressure measurement, urinalysis, microscopic sputum examination, heart examination, and possibly an x-ray photograph of the chest—not a mere x-ray examination.

Bronchiectasis means dilatation of bronchial tubes. Influenza may be followed by bronchiectasis. causes are chronic pleurisy, foreign body in the bronchial tube and chronic lung trouble, or the scar tissue from former lung trouble contracting and distorting the bronchial tubes. It may occur in children, but more often in elderly persons. There is severe morning cough, the coughing spell ending perhaps with the expulsion of a large quantity of mucopus, which may be expelled more readily by changes of position. The sputum is fetid in odor, and on standing separates into an upper thin brownish layer, a middle mucoid, and a lower granular layer. The physician with his stethoscope hears characteristic amphoric sounds over the dilated tube or tubes. The condition is not rarely a septic focus or depot which supplies the bacteria or toxins to cause joint or other manifestations (rheumatism). From the sputum a vaccine may be prepared which will not only help the bronchial trouble, but perhaps help the joint condition as well. There is apt to be more or less shortness of breath and cyanosis (blueness) on exertion.

Emphysema means atrophy of the lungs, especially wasting of the elastic tissue, which weakens the walls of the air-cells and allows them to expand and remain permanently expanded or dilated under the pressure of the air in them. The lungs are continually too full of air, and the chest in time becomes barrel shaped; that is, noticeably thick from front to back, though it shows but little expansion or contraction with respiratory effort. This condition often develops in persons with circulatory defects, chronic valvular leakage or myocardial (heart muscle) weakness, and the tendency to it seems to run in families.

The patient is in a continual state of what might be called mild asthma; that is, the breathing is at all times rather labored, with some wheezing on expiration, which is more difficult than inspiration. The chest bulges, the face or lips look cyanotic (bluish), the veins of the neck are prominent, the abdomen is full, there is shortness of breath, especially on warm oppressive days, an annoying wheezy ineffective cough with more or less frothy sputum, much digestive or "stomach trouble" or flatulence. In elderly patients the condition is diagnosed at a glance by the experienced physician—the peculiar posture, wheeze, and atrophic form of the little old man or woman. In younger patients there is a false appearance of robust strength.

Pneumonokoniosis is the condition of the lungs caused by the inhalation of dust. Coal-dust (anthracosis), iron-dust (siderosis), stone-dust (chalicosis), and lint from textiles in mill-workers may cause the trouble. Grain-shovelers and pottery makers, in fact, any one much exposed to dusty air, may develop pneumonokoniosis. The nasal lining, if healthy and if the patient is not

a mouth-breather, will filter out ordinary amounts of dust, but when the exposure is constant and the air heavy with dust some of it will reach the lungs and be deposited there. The symptoms of this condition are chronic cough. shortness of breath, and loss of flesh. The danger is the development of tuberculosis, the dust particles injuring the delicate lining of the lungs and paving the way for infection. Special suction or vacuum ventilators and other means of protecting the worker from dust prevent much trouble. Pneumonokoniosis is variously styled grindstone consumption, knife-grinder's rot, miner's phthisis, gold-dust complaint, potter's rot, grainshoveler's disease, sizer's lung trouble, knitter's consumption, etc. Grinding should always be kept moist, and machine hands should wear a suitable inhaler to filter the dust from the air. One engaged in a dusty occupation must give it up and seek other work if bronchial trouble develops.

Pleurisy.—The causes of pleurisy are the same germs which cause "colds," sore throat, bronchitis, and lung trouble. The pleura is the membrane or sac which covers the lungs and lines the chest. Simple dry pleurisy is a stitch in the side, with some slight fever, painful cough, painful breathing, and tenderness over the pleural inflammation. The doctor hears a friction or rubbing sound when he places the stethoscope over the inflamed spot. In children the pain may be referred to the abdomen, and even as low as the region of the appendix—a fact which has more than once led to a false diagnosis of appendicitis. The treatment is fixation of the side with adhesive plaster or otherwise, counterirritation by mustard paste, menthol applications or poultices for the pain, rest in bed, and, if the cough is severe and painful, something to suppress

it, since it can do no good to cough. Pleurisy is frequently an early sign of tuberculosis.

Pleurisy with Effusion.—Some cases of pleurisy are accompanied by the collection of a considerable quantity of watery fluid in the pleural cavity between the chest wall and the lung on the affected side. The fluid, separating the two inflamed surfaces (chest lining and lung covering), stops or prevents pain, but causes more shortness of breath on moderate exertion. A good many of these cases are not detected for weeks or months because the doctor, if consulted, fails to have the patient remove all clothing from the waist-line up for complete examination. In that event the patient goes about experimenting with useless "tonics" and the like, trying to build himself up and overcome the persistent shortness of breath that prevents any exertion. If the fluid accumulates in large quantity it may have to be removed by means of the aspirating needle. If only a moderate quantity of fluid is present it may be absorbed under careful medical treatment. In some cases the fluid becomes pus, a frequent sequela of pneumonia; this causes septic fever, chills, sweats, and progressively increasing general weakness and prostration, until the nature of the trouble is determined and the chest drained by incision, or perhaps the removal of a portion of a rib or two.

Since all of the foregoing conditions are loosely termed "bronchial trouble" by the average patient, it becomes manifest that the common custom of taking a highly recommended cough remedy is an absurd mistake if not a fatal one.

Abscess of the lung and gangrene of the lung are two conditions that may follow pneumonia. Either would produce extreme prostration and weakness and terminate in death if not approachable by operation. Pleurisy with pus is called empyema or abscess in the chest, a different thing from abscess in the lung, because the empyema can always be drained through the chest wall, while the lung abscess may be beyond the reach of a safe operation.

Pneumonia.—Two kinds of pneumonia are recognized, lobar pneumonia (also called pleuropneumonia) and bronchopneumonia (formerly known as "suffocative catarrh" and more recently as "capillary bronchitis" or "catarrhal pneumonia").

Lobar pneumonia is the typical acute, infectious inflammation of the lungs beginning quite suddenly, running a course of perhaps seven to ten days, then terminating with a "crisis" or sudden fall of the temperature. One or two whole lobes of the lung are involved (hence the name "lobar"). But the danger is not so much from the damage to the lung as from the toxemia or poisoning by the products of the pneumonia germs in the inflamed lung—the pneumococci. We know this because the lung is still as solid and inflamed the day after the crisis as the day before, yet the patient is in far better condition because the crisis means that his blood has marshalled sufficient strength to annihilate the invading germ army at one fell stroke.

The chill or chilliness which marks the onset of a typical lobar pneumonia is and has been greatly misinterpreted. Chilling is not the cause but the effect of the invasion of the lungs by the pneumococcus hordes. This is proved by the fact that even in the midst of a severe chill in the onset of lobar pneumonia the patient's temperature will be found away up several degrees above normal, just

as in the chill of acute blood-poisoning, erysipelas, or malaria—none of which infections are in any way associated with "taking cold" or exposure. During the chill of pneumonia the surface vessels are temporarily closed or empty, all available blood being urgently needed to repel the invasion in the lungs. The chill is a favorable sign, a sign that the patient is going to put up a brave fight; in the very aged, the very weak, or the alcoholic pneumonia often develops without the incipient chill, and the outlook for recovery is correspondingly bad.

The important thing in pneumonia, then, is to help the patient fight the poisons produced by the germs. These poisons particularly damage the heart and the kidneys. Most of the deaths from pneumonia are directly due to poisoning of the heart muscle.

Bronchopneumonia occurs chiefly among babies and young children and the very aged, especially those who have bronchitis. It may be considered the extension downward of coryza or bronchitis. Unlike lobar pneumonia, the onset is gradual or insidious, the patient simply growing weaker and more prostrated without distinct change in the general symptoms. It involves many small patches throughout the lungs, particularly the bases. The chief danger is suffocation (interference with free oxygenation of the blood). It runs no definite course like lobar pneumonia does, but terminates in a day or two or in many weeks, according to the child's strength or the external environment.

In any case of pneumonia two points are important:
(1) The patient can never get too much cool, outdoor air.
In our hospital and private experience we have been convinced that the best chance for the pneumonia patient, of whatever age or previous condition of health, is in the

open air, no matter how cold the weather. This is no mere theory or crazy fad, but the conclusion reached by practical experience. It is the treatment we should wish to have if we should come down with pneumonia, and the treatment we should give our own loved ones in the same circumstances. Of course, the rule holds here as in all other outdoor experience, the patient must be perfectly comfortable as regards warmth at all times of the day and night, and this demands special preparation of the bed and skilled nursing. We do not believe the ordinary home nurse can successfully manage the openair treatment of pneumonia in severe winter weather, and we do not advise the treatment unless skilled nursing is available. Certainly it would be folly and worse to subject any patient to positive physical discomfort in the name of treatment. (2) Pneumonia is infectious. therefore the same precautions must be taken that one would take in the care of tuberculosis or diphtheria or a common corvza—avoid kissing, unnecessary contact, and especially avoid inhaling possible spray from coughing, sneezing, or conversation. Wash the hands carefully with soap and water after every handling of the patient. Catch the sputum in a cup containing a suitable disinfectant or in paper or cloth, to be burned immediately. See that the patient's dishes, utensils, and all personal toilet articles are kept separate from those of the rest of the household until they are boiled or otherwise properly disinfected. Of course, open air and, if possible, sunshine are the best germicides.

CHAPTER XVIII

THE PERSONAL SIDE OF SANITATION

DR. C. V. CHAPIN has been Health Superintendent (Health Officer) of Providence, R. I., for about twentyfive years. By study of sanitation at home and in European centers he arrived at the conclusion that persons and not things are the usual distributors of disease germs. Some ten years ago Dr. Chapin, who, by the way, is not a politician-sanitarian, decided that fumigation after scarlet fever and diphtheria cases was a wasteful rite, and being a man of action he forthwith discontinued the practice in Providence. The result was negative-from the old-timer's viewpoint. There has never been any more scarlet fever or diphtheria in Providence than in other cities since the practice of terminal disinfection was abandoned. Other cities are still creating a bad odor in the sick room after the recovery, removal, or death of persons with contagious or infectious diseases. but to what purpose?

What was safe for Providence is safe for other cities. New York City abandoned fumigation a year or two ago except after small-pox; we imagine the New York authorities are a bit weak-kneed in their faith, for there is no satisfactory reason for making an exception of small-pox. Anyway, the results in New York City have also been negative. No increase of contagious disease.

Upon these practical facts, and upon common sense and a scientific consideration of the life of bacteria, we feel warranted in declaring that sanitation would be far more efficient in the control of infectious diseases if health authorities and the people in general could be disabused of the false conception that bad odors and poisonous gases are of any value in the general management of these diseases. There is incontrovertible evidence to support the belief that soap and water, elbow grease, fresh air, and sunlight are the only disinfectants necessary for the control of infectious disease—these and a general application of the Golden Rule.

Obviously, it would be useless to destroy the germs left in the room and allow the patient to go out in contact with his friends if there happened to be some complication like a running ear after scarlet fever—which might readily convey the infection to others; or a running nose after diphtheria, which might ultimately infect a great many people. Nowadays everybody knows that certain apparently well persons are "carriers" of diphtheria, pneumonia, typhoid fever, or other germs. Neither these carriers nor, in fact, any convalescent can be fumigated or completely disinfected by any of the gases or liquids customarily employed in terminal disinfection of apartments.

Thousands of bacteriologic examinations of objects in the rooms of diphtheria patients failed to demonstrate the germs except upon such objects as glasses, spoons, or handkerchiefs—things directly contaminated by saliva. Hangings, wall-paper, floors, furniture and, in fact, everything that was not obviously contaminated by the patient's saliva proved germ free. Then why fumigate? Why renovate? And why burn evil-smelling incense? Just to appease the vulgar clamor for security—a false and treacherous security.

Why do doctors and nurses so generally escape these infectious diseases they encounter day after day? Because they are rather finicky about washing the hands. The trained nurse and the educated physician never handle a contagious case without washing the hands before leaving the house or room. Also the doctor or nurse carefully dodges any spraying the thoughtless or helpless patient may threaten him or her with—by coughing, sneezing, or explosive conversation without a cloth or handkerchief before the nose and mouth. And, finally, the doctor or nurse does not *fear* infection, knowing how to avoid it, and fear is a very powerful contributing factor.

Curious and sometimes very impressive stories are constructed out of selected details by the old-time sanitarian to prove that scarlet fever, diphtheria, and similar infections are conveyed by inanimate objects like books, letters, clothing long stored away, toys long unused, and furniture long locked up in the former patient's room. But the trouble with most of these exceptions is that they fail to explain all the possible animate avenues of contact or exclude the ordinary modes of immediate infection. In other words, human relationship is so universal and continuous in school, church, theater, conveyance, and home, and human (so-called) beings are so untrustworthy as to voluntary isolation of possibly infectious persons, that the chances of infection are altogether too many to exclude in the average case.

There is no doubt that any personal article, utensil, book, toy, or other object which may conceivably be contaminated by saliva deposited from the lips or the fingers should be burned or otherwise disinfected at the end of a contagious illness. There is no doubt that handkerchiefs, sheets, pillow-cases, night clothing, and blankets require

boiling after any contagious disease. But there is good scientific ground for the belief that it is a waste of time and money to fumigate or chemically treat the air of the room or the woodwork, walls, floors, or furniture of the room if the patient has been properly cared for. If the patient has been absolutely unclean in habits or unruly, then nothing but soap-and-water scrubbing, thorough airing, and the admission of all the available light from outdoors will suffice to render the room safe for any occupant. This applies to scarlet fever, diphtheria, pneumonia, tuberculosis, or small-pox. If the patient is reasonably clean and reasonably well nursed throughout the illness there is no more necessity for renovation of the apartments than there is after any non-contagious illness.

As for the apartments of a consumptive, what has just been said applies with particular force. In some states our rabid non-medical "white plague" howlers have managed to have a law passed requiring terminal disinfection and renovation after the removal or death of a person with tuberculosis—a positive absurdity and a dangerous law in effect. We say "dangerous" advisedly. The law focuses attention upon an unimportant or negligible source of infection and tends to give a false security to members of a consumptive's household. The fact is. that if there is danger to any one the danger passes with the consumptive; if any one is infected it is during the consumptive's lifetime, not after his demise. If infection has occurred—and experts tell us that frequent and prolonged personal contact, as between sisters or members of the household, is the most favorable means of infection of tubercle bacilli—the disinfection or renovation of the apartments cannot alter the fact, the victim will develop the disease nevertheless.

No Disease is Carried in the Air.—It is exceedingly doubtful whether any disease is carried in the form of dust, because even if specific disease germs should use a grain of dust as an aëroplane they would perish of cold or light or thirst in a few minutes. Tubercle bacilli have been isolated from the sweepings of public halls, and when injected into the abdominal cavity of guinea-pigs they have produced tuberculosis, but that is by no means proof that such bacilli could produce tuberculosis in human beings if inhaled with dust. The infection, if any, would be too minute—not a sufficient dose to survive in the body.

The dust question, we believe, is answered when it is said that dust alone, without bacteria, can produce pneumonokoniosis, and the frequent minute abrasions of the delicate lining of the respiratory tract from dust particles may open a portal of entry for any disease germs that happen to gain admission to the body.

The air is germ free even in a contagious hospital.

Germs go only where they are carried by animate carriers—persons, animals, or insects. Surreptitious visitors, old women of the neighborhood, are responsible for many an unnecessary illness, among children particularly. Cats, dogs, mosquitoes, flies, lice, ticks, squirrels, rats, mice, and certain wild animals are known to be carriers of disease. However, the human carrier is the chief offender, and the human carrier does his work largely, we think, with saliva-contaminated hands.

If Saliva Were Blue Ink.—It is difficult to realize the lavishness with which the average individual distributes saliva. Not by expectoration—no decent or intelligent person would expectorate in a public place—but by the thoughtless contamination of everything with the saliva.

If saliva stained things blue what a blue world this would be! For example, the pages of this book would probably be bordered with blue finger-prints, if not now, then by the There would be an exchange of blue-prints next reader. every time the average individual would shake hands with a friend. The street-car conductor would put his trademark on every transfer, the program boy at the theater would affix his mark to every program, the apple man at the corner would beautify his apples, the candy man would decorate his boxes, paper string, and candy with pneumococcus-blue, the newsboy would add his private identification to every paper and every penny, the scholar would have blue-tipped pencils, blue slates, blue hands, face, clothing. The world would be a study in blue. Doorknobs, handles, street-car straps, window ledges, magazines and books in libraries, doctors' offices. and private homes would all have blue covers. There is no limit to the common exchange of saliva.

When we remember that one in each five individuals harbors virulent pneumococci or "cold" germs in the mouth; that practically all harbor germs which may become virulent to others under favorable circumstances, this universal distribution and exchange of saliva becomes something more than a joke.

How to Dodge Germs.—From the standpoint of the Golden Rule it is just as important to protect others as to protect oneself from infection. Mothers and fathers who pretend to be honorable and fair-minded owe it to the community to isolate children upon the first appearance of even an apparently simple "cold," because even a coryza is contagious and may cause no end of suffering and trouble for others; moreover, no one can tell at first whether the apparent "cold" is to prove an attack of

measles, typhoid fever, infantile paralysis, pneumonia, or what not. A "simple cold" is simple only when the denouement does not prove serious.

Yet too often we find parents sending children to school or to play with other children notwithstanding such infectious illness or recent illness. What a common thing it is to see children freely mixing with other children while yet suffering with such a fatal disease as whooping-cough, and in defiance of all law or moral right! What a familiar sight is the victim of a coryza or sore throat attending to his or her regular duties regardless of the dangers to which his or her companions or associates may be exposed! A sore throat may turn out to be diphtheria after the offender has peddled the infection about with utter contempt of all common rights. A simple "cold" in one individual may become pneumonia in the next individual who happens to be infected.

The secret of keeping well is the knowledge of dodging infection. Personal contact, salivary exchange, the openface sneeze or cough, and the indoor or mollycoddle habit constitute the principal things to avoid. One with a slight "cold" is just as dangerous as one with the most virulent small-pox so far as contagion goes.

Water, Soap, and Elbow Grease.—As in sanitation, so in personal prophylaxis, running water, soap, and elbow grease are the most reliable germicides. Children suffer from "children's diseases" largely because children do not wash their hands and faces so carefully and so frequently as adults. It is a general rule that contagious disease prevails inversely as the personal cleanliness of the community. Sanitation begins in the wash-basin and ends in the sunlight. So many people forget to wash even before they sit down to eat, and so many eating places

have no arrangements to permit of washing the hands. The law should rigidly require running water, soap, and clean towels in every place where food is sold to be eaten on the premises. Imagine the possibilities from a waiter's thumb-print in the soup in a dirty restaurant! Imagine the havoc a "Typhoid Mary" could work among the patrons of such a place!

Every eating place, every school-room, every toilet, every dentist's office, doctor's office, barber-shop, and every other place where there is any possibility of fingermouth contamination should have running water, soap, and clean towels in evidence and in frequent use.

Antiseptics.—There is a veritable fad of using antiseptics for all sorts of ridiculous purposes. Take the dentifrices, for instance, is there one on the market that doesn't harp about antiseptic effects? Yet our better educated dentists assure us that a dentifrice had better not contain antiseptic ingredients unless for some exceptional purpose; the antiseptics destroy the delicate cells of the lining of the mouth as well as germs, and perhaps the injury to the lining of the mouth will pave the way for an infection that might never else have occurred at all.

Toilet powders, shaving soaps, face creams, shampoo preparations, articles alleged to stop sweating under the arms or sweating of the feet, dyspepsia remedies, "cold cures," douche powders, gargles, salves, and a thousand and one agents are recommended as antiseptic. It seems that the commercial houses are not yet aware, and do not wish to be made aware, that the antiseptic era of surgery and sanitation has passed and the aseptic era has succeeded it. Do surgeons employ antiseptics in wounds? They do not. They employ the most painstaking care

about personal cleanliness—cleanliness of the operatingroom, instruments, and patient's skin. They have learned long ago that wounds heal better without antiseptic treatment.

Do sanitarians depend upon antiseptics to kill or interfere with germs? They do not. They depend upon isolation and painstaking, finicky cleanliness.

Peroxid, carbolic acid, bichlorid of mercury, these are harmful or dangerous, quite unessential in either surgery or household medicine. Too often fatalities come from their presence in the house; always they delay or embarrass the healing of a clean wound—and if the wound isn't clean it requires medical attention. Carbolic acid salve has caused gangrene of a finger in many a case of simple cut or abrasion, and bichlorid of mercury actually favors infection if used for any length of time. Peroxid is so slight an antiseptic that preservatives are commonly added to make it keep; used on fresh wounds or cuts it would tend to drive infection into the wound by the ebullition it causes, and this would be particularly risky if the wound happened to be one in which there were any chance of tetanus (lockjaw) infection.

That a thing is antiseptic is a very questionable recommendation. At any rate, the antiseptic virtues add nothing to its value from the standpoint of personal health.

Antisepsis means against sepsis—against poisoning by germs. An antiseptic substance delays or interferes with germ growth, but does not necessarily kill germs, as a germicide does. Antisepsis was thought good practice twenty or more years ago.

Asepsis means without sepsis—without poisoning by germs. A thing is said to be aseptic when it is free from

germs, like a freshly baked piece of gauze or a freshly boiled instrument. Asepsis is the present-day practice of surgery, medicine, sanitation. The modern method is to keep clean instead of housecleaning. The present effort and successful practice is to keep the germs out or avoid them, instead of admitting them and then trying in vain to destroy them after they have gained a footing. Asepsis gives some credit to nature by assuming that the blood and other fluids or secretions are quite capable of caring for minute doses of germs, provided overwhelming doses be excluded by the utmost cleanliness.

CHAPTER XIX

THE FAMILY DOCTOR

What is a Specialist?—A specialist is a physician who devotes his attention exclusively to certain lines of practice, such as diseases of the eye, obstetrics, genito-urinary surgery, neurology, diseases of children. Does a specialist have to study longer or pass a different examination from that of the ordinary doctor? No, not under the law. The law grants a license to a physician to practice any branch he chooses or all branches if he desires, including any and all kinds of surgery or special work. However, for his own advantage a specialist generally does try to take some extra courses of study in order to gain greater familiarity with the diseases in which he is particularly interested. Yet many a specialist enjoys a large practice without anything other than gradually gained experience to qualify him.

Now it seems there are a great many people who have no family doctor any more. At least we assume so from a large correspondence with readers of articles we have contributed to newspapers and magazines. There is a notion that if one is ill with anything other than the mumps or the measles it is a wise plan to consult a specialist first, instead of entrusting the treatment to just an ordinary family doctor.

A man may be a very competent oculist or an eminent neurologist and still be utterly incompetent to diagnose cancer of the stomach; and a man may be a top-notcher stomach specialist or a famous surgeon and still be unable to diagnose an obscure pleurisy or an incipient tuberculosis of the lung.

There are specialists and—specialists. Some specialists limit their practice to their own chosen field, and neither treat nor pretend to understand general cases. Others announce that they give "special attention" to such and such ailments, and treat everything that comes their way. Still others advertise themselves as just "specialists" or "graduate specialists," and trim every sucker who doesn't know any better than to bite at such false bait.

From our correspondence with lay readers we have arrived at the conclusion that the selection of a specialist is a more difficult problem than many people imagine. In the first place, it is essential to know or to suspect with good reason that the difficulty is, say, a surgical condition, or an affection of the nerves, or an orthopedic trouble in order to determine what kind of specialist would be likely to understand the patient's condition. In the second place, it is necessary to select a specialist who possesses real ability in his field, and not one who merely works the popularity racket for what there is in it. This, it would seem, is a matter which might well be put up to the family doctor, who ought to be able to decide the question with some show of intelligence. course, there is a great deal of satisfaction in going out of town or having an out-of-town specialist come to you. There is a distinction about this little performance which varies inversely with the population of your home town. And, moreover, the specialist from another town, especially if it happens to be a bigger town, seems to have an air of eminence and ponderous dignity which the home doctors or specialists can never quite equal. In short, were it not often so serious a mistake, the habit of running off somewhere to consult the eminent specialist or surgeon for every little ailment would be amusing.

Every day thousands of dollars are squandered on the wrong specialist. People with nasal trouble which affects the eyesight waste time and money on the oculist. People with kidney disease which affects the stomach throw away the fees they pay to find out how much hydrochloric acid the stomach contains. People with neurasthenia pay the great surgeon for a trial operation, and then come home to make the family doctor's life one long regret. People consult the well-known skin specialist in vain for some condition which regulation of diet by the family doctor corrects in a few days. The habit of taking things straight to the specialist without seeking the family doctor's opinion is indeed an expensive luxury, but one which some of us seem to crave.

Another common error is the notion that a doctor in a small village is less competent than a doctor in a large city or one on a hospital staff, just because he practices in a small place. There may have been some little ground for such a belief in the past, but in these days of free communication by rural mail, telephone, trolley, automobile, and good roads the distinction no longer holds. Indeed, we are satisfied that the average small town doctor is a little better posted and a little more efficient in his work than the average city or hospital staff physician, specialism, of course, excepted. One reason for this is, we believe, that the professionally (not financially) successful small town physician is comparatively more able to buy books and equipment than his city confrère, who has so many more demands upon his purse. And as

for hospital connections, the plain truth is that most of the hospitals are conducted on a routine system, often or, in fact, usually with cut-and-dried or ready-made methods of treatment, and the staff physician derives little more than a sort of prestige and perhaps a little extra practice from his hospital affiliations. We know whereof we speak, having served our time with two fairly representative hospitals. People ought to know that one of the greatest authorities on the heart in the world (MacKenzie) won his reputation as a small country village doctor in England, and one of our leading American surgeons (Mayo) has always been a country doctor. Indeed, many of the famous names of medicine are country doctors. We personally know men in the smaller villages who are head and shoulders above the average city physician—though patients in those villages will come many miles to consult some very ordinary doctor they have heard of in the city. prophet is always without honor in his own country.

The apparent size of a doctor's practice is the criterion by which many judge him. It doesn't matter what sort of practice he is doing, so long as his office is crowded with patients he must be a good doctor. Now, the family doctor's patients are mostly at home in their beds, whereas the specialist's patients are all right on exhibition in his waiting-room every time you call; and the crowd you see in Dr. Jones' office may be there to buy a quarter's worth of liver pills or another batch of cough-dope or some positively illegitimate remedy, for all you know, while the handful of people you find waiting in Dr. Brown's office may be there to obtain his opinion upon important matters. Or Dr. Jones may be doing a rushing business as the physician for some cheap fraternal organization which allows him a dollar a year per member for his esteemed

services, and Dr. Brown may demand the full fees which he knows his services are worth. There are a great many features which determine the apparent size of a doctor's practice—but the grand old public likes to think its particular doctor has a "large and lucrative" practice whether he has or not. And leave it to the doctor to maintain that appearance if he is that kind of doctor!

Every one, whether the head of a family or all alone in the world, ought to select some reputable doctor as medical adviser and learn to consult him for minor ailments before they become serious ones. At least once a year every adult should undergo a general physical examination, such as the life insurance companies require from applicants, as a sort of annual overhauling and stocktaking habit. Certainly this should become the rule after the age of thirty, because from that age onward various insidious diseases—nephritis, arteriosclerosis, heart disease, cancer, nervous diseases—are prone to develop, and only by early detection can they be controlled.

In a good many places it is becoming more and more popular to retain the family doctor by the year; that is, instead of waiting for sickness to come and bring big doctor's bills with it, the doctor is asked to make a contract to furnish his services whenever desired at a specified sum per month or per annum. Of course, this scheme has been in use for many years by the sick-insurance companies and some of the cheap fraternities, but the great fault there is that a third party intervenes between the doctor and the patient and absorbs the bulk of the patient's money. Doctors are just human beings. They can only earn what they are paid. The fraternity member seldom receives the medical attention a sick man

should have. But in the private contract it is up to the patient to obtain full and proper attention for his ills, and it is up to the doctor to render proper services or give up the contract. In practice it works satisfactorily to both sides. And it does something more. Since it costs nothing to have the doctor's advice he is consulted about minor ills and trifling injuries, which he treats or about which he gives proper advice for treatment, and so prevents many of the consequences of neglect or wrong treatment of slight ailments. This, of course, is to the doctor's interest as well as the patient's, since the healthier he can keep his patients the less he will have to do to earn his monthly or annual subsidy. The subsidized doctor comes around and gives advice about ventilation, heating, diet, and home surroundings. He insists upon an annual physical examination for each of his contractholders. He sees to it that the home medicine-chest is supplied with the proper things, and he often saves his annual cost to the patient by showing the patient the unwisdom of investing in nostrums, fake specialists' treatment, or some alleged sanitary apparatus which is not what it purports to be.

The subsidized doctor is going to be the future family doctor. The state has already subsidized about 10 per cent. of the practising physicians of the country for public health duties of various kinds. What is wisdom for the state is wisdom for a group of families. Really a big doctor's bill is a terrible extravagance. It is comparable to the loss of a home without insurance or a workingman's life without insurance. Sickness is bound to come to every family now and then. The cheapest way to insure against big doctor's bills is to make a contract for the doctor's services by the month or year.

Telephoning the Doctor.—Why are so many people rude when using the telephone? The family doctor forms his first impressions like other human beings. When a stranger calls him on the telephone and opens the conversation by saying "Who's this?" he forms an unfavorable impression. When the stranger says, "Say, Jones, you're wanted at 66 Sick Place right away!" he adds to the unfavorable impression. If the stranger would open the conversation by saying "Doctor Jones? This is John Smith, of number 66 Sick Place. Our little boy was taken ill this morning and seems feverish. Will you come and see him as early as possible?" the doctor would be favorably impressed with the Smith family—and probably arrive more promptly too.

Another frequent abuse of the telephone is this: Some unidentified person calls the doctor, and when he has answered by saying "Doctor Jones" or "Yes, this is Doctor Jones," asks "Can you make a call tonight?"

Now that is an embarrassing question. The temptation is strong to deny the possibility, but if the doctor is unusually good natured he may intimate that he would like to know where his services may be required.

"Down on Third Street."

This isn't very definite. The doctor may still contain himself and wonder who would want him on Third Street.

"Oh, there's an old man sick down there, and I guess he's pretty bad."

Well, old men must all have their bad nights. By this time the doctor's curiosity to solve the mystery will have dissipated. He will probably regret his inability to trace out the location of the mysterious old man of Third Street, hang up the receiver quietly but positively,

should have. But in the private contract it is up to the patient to obtain full and proper attention for his ills, and it is up to the doctor to render proper services or give up the contract. In practice it works satisfactorily to both sides. And it does something more. Since it costs nothing to have the doctor's advice he is consulted about minor ills and trifling injuries, which he treats or about which he gives proper advice for treatment, and so prevents many of the consequences of neglect or wrong treatment of slight ailments. This, of course, is to the doctor's interest as well as the patient's, since the healthier he can keep his patients the less he will have to do to earn his monthly or annual subsidy. The subsidized doctor comes around and gives advice about ventilation, heating, diet, and home surroundings. He insists upon an annual physical examination for each of his contract-He sees to it that the home medicine-chest is supplied with the proper things, and he often saves his annual cost to the patient by showing the patient the unwisdom of investing in nostrums, fake specialists' treatment, or some alleged sanitary apparatus which is not what it purports to be.

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resentment and actually refuse to recognize him ever after.

Some people choose a doctor because he drives their kind of car, or votes their ticket, or attends their church, or manages to have his name frequently mentioned in their daily paper. Some people fancy that because a doctor can carve out an appendix or saw off a leg he must be better educated than some other doctor who does not do any surgery. And some people call Dr. X for the children, Dr. Y for mother, Dr. Z for father, and so on, under the impression that Dr. Jones, the family doctor, who doesn't believe in publishing his cases in the daily prints, isn't qualified to do anything more than vaccinations, maternity work, and certificates of disability.

What is the Difference Between the Ouack and the Family Doctor?—There is but one point of difference honesty. The quack attracts business by the aid of printer's ink. The family doctor builds a practice by the aid of satisfied patients. The quack is always a "specialist," but he seldom divulges what his specialty is; he prefers to be considered sort of an all-round specialist for easy marks who like that kind of buncombe. The family doctor may be particularly interested or unusually successful in the treatment of certain special troubles, but if so he leaves it for his patients to learn of his ability from their friends or from other physicians in the neighborhood. The quack pretends to "guarantee" a cure and often gives a fake guarantee in writing-for a price. The family doctor never guarantees a cure under any circumstances whatever, because he knows that is a human impossibility. The quack opens his office with a great alarum and advertises his yearning desire to help his fellow-man. The family doctor hangs out his shingle and waits quietly for his first patient. The quack, nine times out of ten, disappears between two days. The family doctor sticks in town. The quack "will be at such-and-such an address on such-and-such a day" each week or month or as often as he can make his circuit of the sucker-towns. The family doctor keeps busy enough in his own home town. The famous quack "specialist" is unknown or morally disreputable in his own home town, but printer's ink covers him with fame in the sucker-towns on his circuit.

A trustworthy physician never attempts to practice under any firm or trade name other than his own. If he is represented as one of an "institute" or "clinic" or "association," or if he practices under the title of "The United Doctors," "The German-American Doctors," "The x-Ray Experts," "The Known Specialists," "The Vienna Professors," or "The New York Specialists" he is unreliable. Indeed, if he is really a physician and holds a license to practice medicine, the license may be revoked in some states (New York, for instance) for just such an offence.

The Law and Medical Practice.—The law is extremely lax in its bearing upon medical practice. Almost any person, regardless of qualifications or education, may venture to call himself "doctor" and practice the healing art, so far as the authorities are concerned. In every city there are all sorts of unlicensed practitioners doing business in defiance of law, and unless the organized medical profession prosecutes them for practising without a license they may go on fleecing the public without let or hindrance. If a new charlatan comes to town and advertises himself as a "specialist," without recording his license with the county clerk or registrar, no one minds. If the reputable physicians of the place call the attention

of the police or prosecuting attorney to the breach of law, these complacent protectors of the public answer, "Well, go ahead and hire detectives to get evidence!" Perhaps the physicians each contribute to a fund to hire the necessary two detectives, who consult the faker and have him diagnose or prescribe for them. Then a jury of hardheaded business men hears the trial and finds some technical excuse for dismissing the charge.

We dare say the average police magistrate, prosecuting or district attorney, or presiding judge doesn't even know what constitutes the practice of medicine in his own state. Many of them seem to think a doctor isn't actually practising medicine unless he prescribes or administers drugs. whereas the state law in many states specifically defines the point in language something like this: "Any person who holds himself out as being able to diagnose, treat, operate, or prescribe for any human ailment, injury, physical condition, or deformity is deemed to be practising medicine within the meaning of this act." Yet when a mail-order chiropractor, or a six-easy-lessons mechanical therapist, or a weekly letter viavist, or any other unlicensed practitioner is commended to the, so to speak, authorities, they answer, "Why, we understand they don't give any medicine; they treat disease only by manipulation or electricity, or prayer, or what not."

The family doctor has been altogether too modest in the past. That is the reason, and the only reason, for the existence of a whole brood of so-called non-medical systems of healing today. The grand old public imagines a healer has to conform to certain legal requirements before he can foist himself upon the public. No one but the family doctor really knows the shameful truth, and he fears it is not good taste to tell.

CHAPTER XX

NOTES ON MISCELLANEOUS MAJOR AND MINOR MALADIES

Abscess.—An abscess is an overwhelming localized infection with pus-producing germs. Be it at the root of a tooth (ulcerated tooth), about the tonsils (quinsy), in the skin (boil), or within the body, the quickest and safest treatment is incision and drainage.

Actinomycosis.—This disease of cattle, called "lumpy jaw," sometimes occurs in man. It is characterized by great swelling of jaw and face, or wherever the point of infection may be, sometimes the lungs being infected. The treatment is radical surgical removal of the infected tissues.

Asthma.—The word asthma is popularly applied to difficult breathing from heart disease, emphysema, chronic bronchitis, uremia (kidney disease), and other conditions causing labored breathing at times. But true spasmodic asthma occurs without any of these underlying factors, and in seizures of great severity, with intervening periods of perfect ease or free breathing. Peculiar articles of diet are the cause in some cases, the patient suffering asthma when another individual might suffer an attack of erythema or hives instead. Also the emanations or dandruff from certain animals (cat, dog, horse, parrot, etc.) or pollen of plants induce attacks, as in hay-fever. But the present view is that

asthma is most frequently dependent upon some septic focus elsewhere in the body, and the discovery and cleaning up of this focus brings permanent relief. It may be in the tonsils, about the teeth, in the nasal accessory sinuses, the gall-sac, appendix, or pelvis—some old chronic trouble which may have given no special trouble for years.

Anthrax.—This is a disease of sheep and cattle, and sometimes occurs in men handling hides or caring for animals ("woolsorter's disease"). It begins as an itching pimple or pustule which grows steadily larger and more inflamed until the arm or other part involved is intensely swollen. There are serious symptoms of general blood-poisoning—chills, fever, and sweats. The treatment is destruction of the infected tissue by the actual cautery or radical surgical excision.

Aneurysm.—A dilatation or sacculation (ballooning) of an artery. It is due to arteriosclerosis, injury, or some old trouble near a large artery which makes traction upon the artery wall through scar contraction. If in an artery which can be reached and tied off the condition is curable. If in a principal artery, like the aorta, the best treatment is wiring. The aneurysm is likely to increase in size and damage neighboring parts by pressure or even wear away bony walls and press upon the spinal cord, causing paralysis of the lower part of the body. The aneurysm may rupture at any time and cause fatal internal bleeding.

Ankylosis.—This is stiffness or rigidity of a joint tollowing inflammation. If the joint is absolutely rigid (bony ankylosis) nothing but an operation will bring back use of the joint. Dr. Murphy has devised an operation in which the joint surfaces are restored and

smoothed with suitable reamers and portions of fatty fascia stitched in place to serve as lubricant, which gives excellent results in skilled hands. If the ankylosis is not absolute, patient daily passive movements and massage will improve the function of the joint or joints.

Bed-sore.—A bed-sore is an ulcer caused by prolonged pressure. It is to be prevented by keeping the sheets fresh, smooth, and clean, by turning the patient frequently from one side to the other, by bathing the back with alcohol and then applying talcum powder once or twice a day, and by keeping the bed dry. A ring of cotton, gauze, or a rubber air-cushion ring may be necessary in persons absolutely confined upon the back. bed-sore has appeared it generally heals best under dry powder dressings—zinc oxid, boric acid, talcum, perhaps occasionally thymol iodid powder, or any of the antiseptic dusting-powders.

Blood-poisoning.—The correct name for acute bloodpoisoning is septicemia. Contrary to popular notion, it is never caused by dyes, verdigris, rust, or any chemical substance, but only by bacteria. A rusty nail or a dved stocking may be absolutely sterile, and a bright new nail or a clean looking white stocking may harbor the most virulent bacteria, such as those of lockjaw, for instance. It is foolish and fatal to base a fear or an opinion upon any such idea. The early symptoms of septicemia are inflammation and irritation about the scratch or abrasion, or puncture or wound of entrance, chilliness, headache, slight fever, and soreness and swelling of lymph-nodes above the seat of trouble, with red lines in the skin along the course of the absorbing lymph-channels up to the sore kernels. The only safe treatment is

immediate incision of the wound of entrance if it can be found. Meantime soaking the affected arm or leg in a large tank or tubful of very hot water for hours at a time, and keeping it dressed in hot compresses between soakings, seems to be the most effective treatment. Salves and alleged antiseptic liquids are valueless. The internal treatment is more important, and in certain cases vaccines or antitoxins may be necessary.

Boil.—A boil is a small abscess of the skin. We know nothing better than early incision or puncture of the point of the boil, followed by a dressing of gauze in large bulk, saturated with hot salt and citrate of soda solution—a handful of salt and a tablespoonful of citrate of soda dissolved in a pint of boiled water. Boils are apt to come in successive crops, the secondary ones being deliberate infection of sound skin by unclean fingers. If repeated crops of boils are threatening, a vaccine made from the pus will often overcome the tendency.

Backache.—We have never seen a case of kidney trouble, excepting serious surgical conditions, that was a cause of backache or pain in the back—although the kidney cure fakers have educated the grand old public to think backache indicates something wrong with the kidneys. Most backaches are caused by digestive disturbances; many are found to be due to strain or relaxation of the sacro-iliac joint; many are relieved when piles are removed or varicocele properly supported or constipation overcome. Women may have backache from displacements, but many women have pronounced displacements without ever experiencing a symptom of any kind. Posture, flat feet, weak feet, high heels, bad corsets, marked and uncorrected eye-strain, bad chairs or benches which do not support the lower spine, the drag

of women's clothing on the waist, abdominal relaxation (ptosis), and the "debutante slump" are common causes of backache. Muscular soreness from strain of the back in stoop-posture work is a contributing cause very frequently, and dietetic excesses and auto-intoxication therefrom keep the muscles sore unduly long. Here the remedy would be a moderate fast, milk and bread and fruit diet, massage, and local hot air or hot applications. Support of the back by an abdominal supporter, a suitable corset, or a sacro-iliac belt or adhesive plaster girdle is particularly helpful in those cases due to relaxation or strain of the sacro-iliac joint (the joint between base of spine and hip-bone).

Bow-legs.—All newborn infants are bow-legged and a trifle club-footed. If the bowed leg does not straighten out by the time the child is three years of age, daily massage and possibly correction of diet may be required. If the condition persists, either specially fitted braces or an operation upon the deformed bone may be necessary. Rickets is the usual cause of markedly bowed legs. While a child should not be urged unreasonably, there is no harm in voluntary efforts to walk at an early age.

Corns are caused by friction and pressure, usually from tight shoes or improperly shaped shoes. It is useless to cut or otherwise remove the corn unless the pressure and friction are also removed. Persons confined for a period in bed lose their corns. The cutting of corns is only safe when the foot is first thoroughly washed and the skin about the corn and the corn smeared with tincture of iodin and the instrument boiled and the operator's hands thoroughly scrubbed. The formula of the popular corn-cures is generally about like this:

R.	Salicylic acid	30 grains.
	Lactic acid	
	Liquid collodion	
	Fluidextract cannabis indica	
Kee	ep in tightly corked bottle. Apply to corn	only, every night

for a week.

For soft corns, wash and dry the feet and apply to the sore places a 10 per cent. silver nitrate solution by means of a camel's hair brush every two or three days.

Diphtheria.—A word in the interest of the patient and a word in the interest of the family doctor may not be amiss here. It is still a common thing for a diphtheria patient to receive too little antitoxin in the first dose, but it is impossible to give a patient too much antitoxin in the first dose, for if a homeopathic quantity is harmless the maximum quantity will be harmless, just as harmless as so much soup in the diet. Twenty to thirty thousand units of antitoxin may sound large, but that would really be none too much to administer in the first dose for a case of moderate severity.

The doctor's judgment is more reliable than the health board's culture in the diagnosis of diphtheria. Perfectly healthy persons often have diphtheria germs in the throat or nose (carriers), and unquestionable or even severe diphtheria may fail to give a positive culture. Hence the culture is only of secondary importance. The competent physician diagnoses diphtheria without a culture in most cases, relying upon the culture only in doubtful cases.

We now have what is called the "Schick test," in which a minute drop of diphtheria toxin is injected in the skin, and if the patient is susceptible a reaction follows, but not if the patient is immune. Thus can be decided the question of whether or not exposed individuals require a preventive dose of antitoxin.

Feet, Pronated (Weak) and Flat.—Young persons suffer from tired, aching, painful, weak feet. When observed critically they will be seen to roll the ankles inward and to toe unduly outward when walking. The inside edges of soles and heels wear off before the outside edges. This condition, called pronation or pronated feet, is caused by narrow, out-turned, pointed shoes. It may require strapping of the feet and calves with adhesive plaster to hold them in corrected position—the doctor alone can do this properly. Lifts may be required on the inner edges of soles and heels. Wide, low heels, and straight inside sole lines are essential. Heel-and-toe drill, toeing in, and perhaps general tonic treatment will help.

Flat-foot is a later stage of pronated or weak feet. The pain is felt in the feet, calves, knees, hips, or back. The footprint is characteristic. The treatment depends upon the patient's occupation, age, and physical condition. Made-to-measure arch supports may render real service when fitted by a skilled physician or orthopedic surgeon, but all the ready-made arch props and "treatments" by shoe-store employees or "orthopractic" experts or "foot-hospital" artisans is time and money wasted. These uneducated mechanics are incapable of determining whether the trouble is pronation (which should never have an arch prop applied), flat-foot, or some systemic disease like syphilis, gonorrhea, tuberculosis, locomotor ataxia, or infectious arthritis affecting the foot.

Felon is a suppurative infection of the periosteum of the bone. The extreme pain is due to the unyielding

toughness of the membrane which prevents the few drops of pus from finding vent. Disaster is the certain result of procrastinating with poultices, salves, or that worst of all expensive remedies, canned mud. The suffering and the danger of gangrene or serious damage to the general health is immediately terminated by surgical incision, which is only properly done under an anesthetic, and should be free enough to assure perfect drainage. When an infected or sore finger begins to throb and pain atrociously, and especially when chilliness or fever or headache indicate early septicemia, it is high time to resort to surgery. Some of the most deplorable and longdrawn-out cases are those in which reliance is placed on impotent external applications and prompt incision refused by the patient for some foolish reason. Felon intelligently treated should not disable the patient more than three or four days.

Foreign Body Swallowed.—Parents often become alarmed when a baby or older child accidentally swallows a coin or other object. While a sharp object might possibly give some trouble, as a general rule no ill consequences ever follow such an accident. Even an open safety-pin may pass through the bowel safely. The only thing to do when a foreign body is swallowed is to avoid cathartics and feed the child plentifully; bananas, potatoes, and similar bulky foods being advisable if the child is old enough to eat them. Then watch the stools for the missing article.

Goiter.—There are three kinds of goiter, which require very different treatment. What would perhaps help one kind might seriously aggravate another kind. First, simple goiter, a moderate enlargement of the thyroid seen mostly in girls approaching or at puberty. Unless

the gland is more than ordinarily active in connection with the sexual development which begins at this period of life there is no other known explanation for the trouble. At any rate, it never shows any influence upon general health, and if let alone generally disappears after a year or two. Certainly it does not require any radical treatment and should not be experimented with, because maltreatment may cause serious results. There are numerous superstitious practices in vogue in the treatment of goiter which no intelligent mind could for a moment accept. Likewise a certain class of disreputable magazines and mail-order papers advertise all sorts of quack remedies and quack goiter specialists, but any one with a grain of sense will not be interested in such methods. The family doctor knows all there is known. and can treat goiter more effectively than any alleged goiter specialist. At any rate, the family doctor won't do any harm.

Cystic goiter is seen in persons of all ages, and this form of goiter is sometimes very large, weighing several pounds. It does not in the least affect the general health. There is only one remedy—surgical removal of the growth. Nothing else can possibly cure.

Exophthalmic goiter is the third form, seen in men and women in early adult life or youth. It seriously affects the health, causing (1) nervousness and fine tremor; (2) palpitation and very rapid pulse-rate; (3) noticeable prominence or bulging of the eyeballs. The general symptoms are caused by excessive thyroid secretion. many cases the general symptoms are misinterpreted as "neurasthenia" or nervousness, or just palpitation, because the very slight enlargement of the thyroid is overlooked in the examination. However, the combination

of the three symptoms mentioned or even two of them should suggest the possibility of exophthalmic ("exophthalmic" means prominent or bulging eyes) goiter or hyperthyroidism. Moderate cases are controllable and, after months or years, curable by medication, rest, and general good management of the habits. Severe cases require removal of part of the gland as a life-saving measure. Operation may be only partially successful, or the patient may be months in regaining anything akin to normal health afterward.

A word about iodin locally. For the simple goiters it may be safe to use iodin very dilute, in tincture or ointment, once a week. For cystic goiters it cannot possibly help. For exophthalmic goiters it would be very injurious and perhaps a fatal experiment to try without medical advice.

Drinking water, so far as is known, is not the cause of goiter, nor is the lime in the water.

Glanders.—This is a disease of the horse (farcy) which occasionally infects man, causing ulceration and suppuration in the nose, ending in death or in a chronic septicemia.

Harelip.—The two vertical lines of the upper lip represent the union of three processes or projections which unite in fetal life to form the upper jaw and upper lip. When this union is incomplete on either side or both sides the child is born with single or double harelip, or cleft-palate, if the cleft extends deeper than the lips. Harelip should be operated on within the first few weeks of life, just as soon as the child is started nicely, because then the nerves are least sensitive and the tissues will heal most readily. If there is cleft-palate, then it is generally best to postpone the operation for a few years,

because the repair of the bony palate is a severe operation. As for the cleft-lip operation, any physician may do it, but in the most skilled hands it may fail the first time. However, operation does no harm, and should be repeated after a few months.

Hydrophobia, or rabies, is an exceedingly rare disease in man, though fairly common in animals—dogs, cats, skunks, wolves, and sometimes domestic animals. When bitten by an animal, if it is desired to make certain what should be done, have the animal watched in confinement for two weeks by a competent veterinary surgeon. If at the end of that time the animal has exhibited no signs of illness, it is certain it had no rabies. If the animal is killed, the whole head should be packed in salt or alcohol and shipped at once to a pathologic laboratory for examination. Of course, the bite should be promptly treated, preferably by a swabbing with pure carbolic acid followed at once by pure alcohol. If there is reason to believe the animal had rabies, the Pasteur antirabic treatment should be taken, and nowadays this treatment can be administered at home by the family doctor, each dose being mailed in a special package from the laboratory. Here are some "don'ts" for the patient's welfare: Don't kill the animal and imagine that ends the danger; in other words, don't be superstitious. Don't imagine rabies prevails only in "dog-days," it is just as frequent among animals in November or January as it is in August. Don't imagine a dog is "mad" because he is a snarly, ugly creature. Rabies in animals paralyzes the hind legs and renders the victim helpless after a few days. Don't imagine the rabies victim fears water or that he barks like a dog. Spasms of the throat make drinking difficult, but there is no fear of water

whatever. Don't forget that rabies is extremely rare in human beings—if, indeed, it ever does affect man. The writer has seen rabies in animals, but never in man, and he has heard about a hundred physicians in a medical convention admit they had never seen it in man. However, good medical authorities describe what they believe to be rabies in man.

Hay-fever.—Caused by a specific pollen which varies in different cases. The most hopeful outlook for treatment appears to be immunization by hypodermic injections of gradually increasing doses of the specific pollen over a prolonged period of weeks before the opening of the hay-fever season. But first, as the cook-book says, catch your rabbit—find out exactly which pollen produces the attack. There is some logic and some faith in this treatment, but so far it is at least reasonably effective. Some of the plants responsible for hay-fever are: ragweed, plantain, dock, fever-few, golden-rod, rose.

Hookworm.—The hookworm (Ankylostoma duodenale) enters the body through the skin, causing first what is known as "dew-itch" or "ground-itch." This itch is acquired by children running barefooted in various parts of the South, especially in the regions where schoolhouses and other buildings or gathering-places have no proper privies, as is frequently the case with public schools in certain parts of the South. The ground, under such unsanitary circumstances, becomes polluted with hookworms in the fecal excrement from pre-existing cases in the community.

A few weeks after the dew-itch develops the worms reach the duodenum (small bowel) by way of the lungs and through the blood. Here they fasten their hold upon the lining of the bowel and extract blood and nutriment. They deposit their eggs, which are carried out in the evacuations, and again contaminate the soil.

Pronounced anemia is the characteristic effect of hookworm infection. The patients, young and old, become weak, tired, listless, and "no account." The diagnosis is made by discovering the eggs or the adult worms in the stool by means of a microscope. The treatment is large doses of oil of chenopodium in capsule, a remedy which has converted hundreds of victims into healthy, active citizens during the past few years. As thymol, the other hookworm specific, is not without poisonous properties, it must be taken under competent medical supervision.

Hammer-toe.—A contraction or shortening of the flexor tendon of the toe. The best treatment is a division of the tendon under the skin, a little operation which any doctor can perform.

Hip Disease.—Congenital hip disease is a dislocation of the hip due to faulty development of the socket. The child fails to walk, and obviously limps upon the shortened leg. The treatment is forcible reduction of the dislocation under anesthesia and plaster-of-Paris casts applied successively over a long period to gradually develop and retain the hip in the socket. [Lorenz.]

Tuberculosis of the hip-joint is a fairly common condition in children. It requires the same general treatment used for lung tuberculosis plus appropriate apparatus or plaster-of-Paris to keep the hip at rest.

Club-foot is a congenital interruption of development, the foot remains in the position it has normally assumed in prenatal life. It requires careful molding and correction by frequently replaced plaster-of-Paris bandages in the first weeks and months of life. The earlier a developmental fault is treated, the better will be the result.

Headache is such an indefinite symptom that we cannot attempt to outline the various causes. It must suffice to mention a few common factors and suggest a few general points to be considered in treatment.

Constipation, eye-strain, brain disease, anemia, uremia, high blood-pressure, neurasthenia, auto-intoxication, and the toxemia of various general bacterial infections, affections of the nasal accessory sinuses, lead-poisoning, syphilis, tobaccoism, and overeating are probably the most frequent causes of headache.

For nervous headaches a solution of menthol in colognewater (5 grains to the ounce) may be used to bathe the head, keeping it out of the eyes.

For fatigue headache, caffein, in the shape of strong coffee, tea, or powdered caffein, 2 grains, may be taken, repeated in an hour.

For sick headache, provided the heart is not weak, 2 grains of antipyrin and 10 grains of sodium bromid may be taken dissolved in a tablespoonful or two of hot water and mixed in with the contents of the blue paper of a Seidlitz powder.

Persons subject to frequent headaches must beware of any remedy which contains acetanilid, phenacetin (or acetphenetidin), antipyrin, or antefebrin, because, while these drugs relieve pain, they tend to depress the heart and break down the blood, and if taken frequently or by one whose heart is weak they are capable of doing great harm.

Any headache is more easily relieved if the patient will lie down in a quiet place and rest for an hour or two. There should be heat applied to the feet and, as a rule, cold to the head. A full tepid pack in bed is a famous and harmless headache remedy. An active saline cathartic helps most headaches.

"Kernels," or swollen lymph-nodes, may be felt in the neighborhood of any infection. They indicate inflammation or irritation in the area they drain. In the neck they are felt when the tonsils, teeth, mouth, nose, eyes, scalp, or skin of face is inflamed. It is futile to attempt to reduce them unless the primary trouble is sought out and corrected.

Lockjaw, or Tetanus.—This is caused by a bacillus which seems to be a normal inhabitant of the intestinal canal of herbivorous animals, and hence wounds sustained about barns or pastures or on the street may become infected. Especially in warm weather is this danger present, and more so in comparatively slight wounds, abrasions, or punctures which do not bleed. Besides the careful first-aid treatment which all such wounds should have, the injection of a prophylactic dose of antitetanic serum can do no harm and always prevents lockjaw.

If lockjaw develops, the first symptoms appear from three to ten days or two weeks after the primary wound, which may have healed perfectly. The patient feels soreness or stiffness like sore throat, becomes nervous and uneasy, and presently notices that the jaw opens only part way. In a few hours convulsions begin. Large doses of antitetanic serum injected into the spinal canal or the brain cavity may still save life, but the outlook is bad in direct ratio with the shortness of the period of incubation (primary wound to first symptom).

Loose Cartilage.—Floating body in the knee, internal derangement of the knee, or loose cartilage in the knee is the result of some former injury or inflammation. The

characteristic symptoms are sudden locking of the joint, followed by swelling and soreness for several days. Such attacks recur again and again, and may come on when the patient is active or even when moving the knee in bed. The treatment is, first, an elastic knee-cap. If that does not prevent the disabling attacks, then incision and removal of the loosened or detached cartilaginous body. This operation is a safe one nowadays and usually gives permanent relief.

Morton Toe, or Tarsal Neuralgia.—This is a neuritis or neuralgia of the interosseous nerves of the forefoot or tarsus. It is caused by pressure upon the nerves, usually from giving or breaking down of the transverse arch of the foot, which is the direct result of narrow, pointed, out-turned soles and the strain thrown upon the forefoot by high heels. The condition is characterized by sudden attacks of pain when walking, so severe that the sufferer may be forced to remove the shoe in order to find relief. The treatment is a proper shoe, perhaps with a beveled felt pad, 1 by 2 by 1 inch, inserted lengthwise under the ball of the foot to support the transverse arch. Strapping the feet also helps. In some cases no relief short of removal of the head of the fourth metatarsal bone will suffice.

Hallux Valgus, or Bunion.—A bunion is a partially dislocated great toe joint covered by an inflamed or infected bursal pad. It scarcely needs saying that the condition is produced by shoes with out-turned soles; that is, shoes with soles that do not adhere to the natural straight inside line. It is also favored by very high heels through the oblique plane of the great toe joint in flexion. By way of treatment, first, a properly shaped round-toed, roomy shoe; occasional soaking in very hot

water, drying, then painting with tincture of iodin and grain alcohol, equal parts. The application of ½-inch adhesive plaster straps spirally from inner edge of nail under and around toe, back over forefoot in such a way as to tend to draw the toe back toward the median straight line. A spring apparatus may be worn at night for the same purpose. In long-standing cases little short of a radical operation will help. The operation consists of excision of the heads of the bones of the joint, necessitating about three weeks' disability, but curing the bunion for all time.

Malaria, or "Fever and Ague."—This is a disease which can be acquired only through the bite of the breed of mosquito called Anopheles, which is the intermediate host of the malarial plasmodium or germ conveying the infection from man to man. The Anopheles mosquito is easily distinguished from the common Culex mosquito by the fact that its body rests at right angles to the surface on which it alights, instead of parallel with the surface as the ordinary Culex rests. This breed of mosquito does not travel many rods from the stagnant water in which it hatches, and the stagnant water may be a mere tomato-tin full or an obstructed roof drain, or old bit of crockery in the back yard, or a soggy drain or rain-barrel, or it may be a marsh or the conventional swamp. vention of malaria is the protection of the malaria patient against mosquitoes by mosquito-bar over the bed or well-screened windows and doors; seeing that no small collections of water stand unscreened more than a few days; drainage of stagnant pools and marshes near residential districts; and spraying stagnant water which cannot be drained with crude petroleum or kerosene oil to kill or suffocate the larvæ of the mosquito.

There are vast sections of country where malaria never appears unless the patient comes from or visits a district where the Anopheles mosquito abounds. Many conditions other than malaria cause chills and fever, such as tuberculosis, septicemia, and typhoid fever, and this sometimes leads to errors in diagnosis. Of course, no diagnosis of malaria can be considered positive unless the fresh blood is examined under the microscope and the malarial plasmodium found in the red corpuscles. The treatment is for the attending physician to decide in every instance.

Pin-worms or Seat-worms.-Little white worms resembling ½-inch lengths of ordinary white thread (and often called thread-worms). They exist in the large bowel as high up as the appendix, but mostly in the rectum. They cause itching and irritation about the anus and crawl out upon the skin, where they may be found in many cases. Sometimes they invade the vagina and cause irritation there. They are found mostly in children, but not rarely in adults. The eggs are probably taken into the mouth in contaminated water or perhaps uncooked food from the contaminated ground. Children often directly infect one another by unclean hands-handto-mouth infection. Other than itching, the little worms produce no symptoms. One good remedy is an ounce of quassia chips boiled for an hour in a quart of water (the chips in a muslin bag). A little of this may be injected into the bowel once a day and retained as long as possible. Internal treatment may be necessary in some cases.

Prickly Heat.—Also known as sudamina, lichen tropicus, miliaria. A condition of the sweat-glands due to excessive sweating characterized by an eruption of little pimples. Itching, pricking, burning sensations accom-

pany it. It is common in babies and fat people. Temporary reduction of diet, plenty of cooling drinks, bathing with mild soda (saleratus) and water, a saline laxative, and the free use of plain talcum, with light clothing, constitutes the proper treatment.

Palpitation is the name given to consciousness of the heart's action, especially to forcible or rapid heart-beat. There are a great many factors other than heart trouble which may produce palpitation, and in the majority of cases in which this symptom is complained of the cause is found to be something apart from the heart. Anemia, indigestion or overeating, exophthalmic goiter or hyperthyroidism, tobacco, tea or coffee excesses, emotional excitement, particularly sexual disturbances, and functional or organic disease of the heart itself may cause pal-The treatment will obviously depend upon the pitation. cause or causes in each case. For purely nervous cases or those caused by overeating or indigestion a brisk calisthenic exercise or a long walk is better than any medicine to regulate the heart. Young athletes who have stopped training or men who have given up athletic work and entered upon a sedentary life often have trouble from tumultuous heart action. These patients particularly need exercise to control the heart—just as a powerful engine needs a load to keep it from running wild, or a flywheel needs a belt to control its power.

There is one point which needs emphasis: It is a custom to say a heart trouble is "not organic, but just a functional condition." The fact is, that all organic heart troubles are functional at first.

Rheumatism, Rheumatoid Arthritis, and Allied Joint Troubles.-Most invalids, whatever their ailments, feel worse on the approach of a storm or when the weather is changing. There is no scientific evidence to support the view that "uric acid" or its derivatives and joint trouble are in any way related. Nor does weather, dampness, or season affect joint disease more than other ailments.

Acute rheumatic fever (inflammatory rheumatism) is certainly a bacterial infection.

Chronic rheumatism, so-called, and rheumatoid arthritis (arthritis deformans—arthritis means joint inflammation, deformans means deforming) are now believed to be specifically caused by infection from some "septic focus" or depot of infection in the patient's body. Common foci are the pus-pockets about diseased gums, abscesses at the roots of teeth (either condition may give the patient no noticeable trouble), old pus-pockets in the tonsils, chronic suppuration in one or another accessory nasal sinus, chronic gall-sac infection, chronic appendicitis, chronic foci in the pelvis in either sex.

Any person with obstinate arthritis or joint trouble deemed "rheumatic" or "rheumatoid" should consider himself or herself rather a sufferer from depotism and institute a search for the depot. The cure of these conditions is brought about by eradicating the primary septic focus. Often this requires careful study, x-ray photographs, laboratory tests, etc., but perseverance is the price of victory.

Circumcision and Phimosis.—Phimosis is the name given to the condition of the male child in which the foreskin is too narrow or too long. Circumcision is the name of the operation by which the redundancy of foreskin is removed, or the tight foreskin slit, so as to permit proper cleanliness.

If the foreskin is so tight or the opening in it so small as to impede urination, the child may require circumcision soon after birth. Sometimes the opening can be stretched sufficiently without cutting.

This operation is done as a religious rite by orthodox Hebrews.

There is no particular evidence that it has any influence upon morality.

When should circumcision be done?

During the first few weeks of life if the obstruction is marked, at the age of one or two years if dilatation or stretching fails to enable the mother to cleanse thoroughly underneath the foreskin, and at the age of ten or twelve or later if the phimosis is such as to render perfect cleanliness impossible.

In young infants no anesthetic is necessary. In older boys ether should be given. In young men the operation may be done by the family physician under a local anesthetic, and it does not prevent the patient from attending to ordinary work.

Round-worms.—These are the usual "worms" of childhood and sometimes adults. The eggs are swallowed in water or they get into the mouth through contamination of the fingers in play, sometimes by direct contact with a child who has worms. The worms inhabit the small bowel, occasionally one is vomited or crawls out of the mouth, but usually they only appear at the anus or in the bowel evacuations. In most instances no apparent symptoms are noted, although the child may pass many worms. The worms are whiter than earthworms, average 4 inches or more in length, and cannot possibly be overlooked or mistaken for mucus or slime in the evacu-Sometimes the child has acute intestinal indigestion—attacks of vomiting, feverishness, heavy sweetish breath, flushed cheeks, white lines about the mouth,

nervous twitching, coated tongue, perhaps picking at the nose—but such an attack is far more frequently caused by a dietetic error and not by worms, though such are the "worm symptoms" grandma has ever pinned her faith to.

The treatment is not a course of alleged "worm medicine." The child must retire with only a bread-andmilk supper. Very early in the morning an active cathartic, such as a tablespoonful of aromatic syrup of rhubarb. An hour later two teaspoonfuls of fluidextract of spigelia and senna or, better, about 5 or 10 drops of oil of chenopodium in capsule or on sugar. Two hours later another dose of aromatic syrup of rhubarb to sweep out the benumbed worms. This treatment will bring away worms if there are any present. The child must take no food until after the last dose of rhubarb. Neither this nor any other worm treatment should ever be given unless the child has passed round-worms or their eggs have been found by microscopic examination of the stool. Parents do a great injustice when they allow old "wiseheimer" grandmas to persuade them to feed nasty medicine to a child on the mere suspicion the child has worms. Rarely does a child sicken, no matter what the nature of the trouble, but that some nosy old hippopotamus intrudes her gratuitous opinion that she "just knows that their child has worms!" Finally, this is as sure as shooting: Sugar and sweets do not and cannot give a child worms.

Spinal Curvature.—A very frequent condition in children from seven to seventeen years, especially schoolgirls too studiously inclined and not enough "tomboy." The child is generally anemic, tires easily, is underweight, and rather flabby. One shoulder may appear to be too high or to droop; the child is inclined to stand with one knee relaxed and the pelvis tilted. Only by a careful

examination with all clothing removed above the hips can the doctor determine whether there is a spinal curvature. The treatment is tonics, outdoor recreations, special exercise, sometimes braces or supports, but never should braces be applied without medical supervision.

Stings by Bees, Ants, Spiders, and Other Insects.—
For bee-stings, hydrogen peroxid, a paste of powdered ipecac and water smeared on the spot, or weak ammonia may be applied. The same treatment is good for the bites of ants or spiders. For mosquito bites, vinegar, soda in water, or I per cent. solution of carbolic acid in water (the standard 5 per cent. solution diluted with 4 parts of water) will relieve the itching. The same treatment may be used for bedbug bites. Bites by scorpions or poisonous snakes must be freely incised at once, sucked, and the part shut off by a tight ligature above the bite for an hour.

Sunstroke.—Exposure to intense heat or direct sunlight may cause heat stroke or heat exhaustion. In the former condition the victim collapses, perhaps goes into convulsions, has an extremely high temperature. first effect of excessive exposure is dizziness or oppression and faintness, which should warn the victim to seek a cool place and rest. The stupor of sunstroke must be distinguished from that of uremia and that of apoplexy, but there is no high fever in uremic coma and no paralysis in sunstroke. The treatment should be general friction of the body with cold alcohol, water, or pieces of ice, to be kept up until the temperature falls nearly to normal. Enemas of tepid (not very cold) normal salt solution are helpful. Ice-bag or cold cloths, frequently renewed, upon the head. Bleeding may be necessary in cases of high blood-pressure. Stimulation by hypodermic injections and avoidance of alcohol.

Heat exhaustion may occur from extreme exposure to heat or sunlight. The skin is cold and clammy instead of hot and dry, as in sunstroke. The temperature is subnormal. Hot baths and external heat must be applied. Otherwise stimulation and prolonged rest as in heat stroke. The rectal temperature is the only safe guide in distinguishing some cases of heat stroke from heat exhaustion, as in either condition the extremities may be cold.

Following sunstroke there may be more or less headache and dizziness at times for years, and the patient is generally hypersensitive to the sunlight.

Chilblain and Frost-bite.—Frost-bite or freezing is the only physical ailment which can properly be ascribed to cold. Chilblain is a superficial frost-bite. First there is numbness or tingling, as in any frost-bite, but it is generally limited to the soles of the feet, which presently become painful, as though burned. Mild chilblain is a mere redness which itches or burns and disappears in a few hours if bathed with cool water containing a pinch of alum, dried, and powdered with talcum powder. When blisters rise they should be left alone until it is imperative to walk, then they may be opened with a sterile (flamed) needle, the fluid gently pressed out with a freshly ironed towel, the skin dried and powdered over with I part boric acid to 10 parts talcum. Wear clean wool or silk stockings, never cotton, if you are subject to cold, sweating, or sensitive feet. Avoid nails in soles-wooden pegs or, better, stitched soles do not chill the feet so quickly. Rubber heels and cork insoles are advisable.

Frost-bite.—The first thing to do for a frozen or frost-bitten ear, nose, cheek, or other part is to rub it briskly but not roughly with the hand, or with a little soft snow or cold water. Don't peel the skin, but keep up a moder-

ate friction and kneading until the blanched whiteness disappears and a normal pink color returns, then stop rubbing. Meanwhile see that the patient is in a comfortably warm place, not outdoors, and give some hot coffee, hot broth, or other hot drink, but never alcohol, which favors freezing and shock.

If the skin is peeled or broken in frost-bite great care must be exercised to avoid infection, which would be disastrous to the nutrition of the frozen part. A single painting with half-strength tincture of iodin, followed by an application of a little sterile vaselin from a collapsible tube, and a plentiful dressing of clean freshly ironed muslin or sterilized gauze to protect the part till medical advice can be had.

For general freezing the treatment is active stimulation with hot strong coffee, aromatic spirits of ammonia (teaspoonful in a little cold water), or hypodermic injections of atropin. A full hot bath prolonged for hours, or the hot pack, or hot bricks or plates or hotwater bottles all about the patient, care being taken to avoid burning the unconscious patient.

Tapeworm infection in this country is usually acquired from raw or insufficiently cooked meat, pork or beef that is "measly." In the animal the worm passes one stage of its life; in the human host it passes another stage. Animals and human beings infect each other in continual rotation, via the excrement from the bowel and by eating uncooked or "rare" meat. Tapeworms consist of a great many segments in chainlike lengths of from a few feet to 40 or 50 feet. The head has hooks by which it fastens to the bowel. The head is so small that it can be seen only with difficulty by the naked eye, but the segments increase in size from the head (whence they gradually grow)

toward the tail. The average segment is flat, pale-yellowish in color, perhaps $\frac{3}{4}$ by $\frac{1}{3}$ inch, there usually being many segments passed in one chain together. Tapeworms may be present without producing symptoms. If there are symptoms they are vague. Periodic distress in the bowel, periods of ravenous appetite, underweight, and periods of impaired appetite are perhaps the commonest symptoms noted. Of course, the diagnosis is made by finding tapeworm segments in the evacuations or the eggs may be discovered by microscopic examination. In blood examinations, when there appears an unusual proportion of the eosinophile white corpuscles, the suspicion of tapeworm or similar infestation is aroused.

The treatment is a matter which cannot be carried out successfully by the patient himself. The family physician should be consulted.

Trichina.—This is a small worm which sometimes causes very serious trouble. It is acquired by eating uncooked pork or ham. The worm might be easily overlooked in the meat—"measly" meat. It makes its way from the stomach into the muscles and sets up great irritation there, causing general pains, soreness, stiffness, fever, and headache. A suspicious symptom in such cases is the puffiness of the eyelids and cheeks. Blood examination shows a marked increase of the eosinophiles. A minute portion of a muscle of the calf may be removed under cocain and examined under the microscope for the trichina. The condition is painful, but recovery generally ensues after a few weeks. There is no known cure after the muscles are once invaded except nature's own curative power.

Tear-gland Cyst.—This is a fairly frequent swelling

in the upper outer side of the lid. It requires surgical removal, which is a simple operation.

Tear-duct Obstruction.—Sometimes the tear-duct, which drains the tears from the eye into the nasal cavity, becomes obstructed or strictured and requires dilatation or probing, which is a duty of the oculist. The result of such obstruction, which may be caused by turbinal thickening inside the nasal passage, is the overflow of the tears upon the cheek of the affected side.

Children's Diseases.—It is an injustice to even think of measles, scarlet fever, whooping-cough, chicken-pox, or mumps as particularly belonging to childhood. The only reason children suffer so much with these ailments is that adults fail to protect the children by isolation of recognized cases.

Of course, the ancient idea that it was good for a child to have these things when young is too cruel to hold these days. If the child can escape any or all of these infections he will be that much better off in the long run.

All of the five diseases mentioned are probably conveyed through the secretions from nose and throat and in no other way, which is all the more reason for isolating an apparently "simple cold."

All of the diseases are contagious as long as the child is evidently ill or as long as any discharges are given off.

The period of incubation—that is, the time elapsing between the moment of exposure and the development of the first symptom—is as follows:

> Measles, ten to fifteen days. Scarlet fever, two to six days. Whooping-cough, no definite period. Chicken-pox, ten to fifteen days. Small-pox, five to twenty days.

Mumps, no definite period. Typhoid fever, one to three weeks. Patient should be isolated:

In measles at least two weeks.

In scarlet fever at least thirty days.

In whooping-cough at least two months.

In chicken-pox at least two weeks.

In small-pox at least thirty days.

In mumps at least two weeks.

In typhoid fever at least two months.

Measles rash appears on the third or fourth day of the illness, and is blotchy, with soreness of the eyes, cough, and corvza.

Scarlet fever rash appears in from twelve to twentyfour hours after the illness begins, and is an evenly distributed, fine general flushing with a myriad of very small spots. There is no soreness of the eyes, but rather a sore throat. Scarlet fever is sometimes called scarlatina and scarlet rash.

Chicken-pox rash appears on the second day of the slight illness and is just a few scattered spots which look "stuck on." Small-pox rash does not appear until the third or fourth day of the pronounced illness, and is a general eruption of a great many deep pimples and pustules.

The whoop of whooping-cough begins after the patient has been coughing rather by spells for a week or ten days. Whooping-cough lasts usually two or three months.

We cannot go into the detailed treatment of these diseases. A few general suggestions only will be laid down. Special books on the care of babies are available for those interested.

The principal danger in measles is pneumonia. There is always cough and bronchitis with an attack of measles,

the eruption occurring within the mouth and chest as well as outside. But there is one preventive of pneumonia—fresh air. There is no reason whatever for keeping the child with measles shut up in a close warm room. With proper bedclothes and nightclothes the patient may profitably breathe cool fresh air night and day. Plenty of cold water to drink. Daily bathing of the skin. Boric acid eye-wash and dark glasses to protect the eyes rather than a dark sick room. A dark sick room is always unsanitary.

In scarlet fever the danger is kidney involvement. Plenty of water, a diet containing liberal quantities of fluids, and flannel nightclothes are advisable. The patient should have a daily bath to keep the skin in good activity.

In whooping-cough we cannot too highly commend the use of the whooping-cough vaccine as a preventive and as a treatment after an attack has commenced. The family doctor can render great service with this vaccine, for whooping-cough is a painful, long-drawn-out illness which may leave hernia, chronic bronchial trouble, or a weak heart behind it.

In all of these diseases great care must be exercised to burn or disinfect all discharges from nose or mouth.

The attendant must also be scrupulously careful about washing the hands after each and every visitation.

Everybody must be aware, by this time, that typhoid fever is now preventable by vaccination. The disease has been stamped out of the United States Army by typhobacterin prophylaxis in the past few years, and since the vaccine immunization is painless and harmless every one contemplating a journey which may expose him or her to typhoid-contaminated water, food, flies, servants, or unknown "carriers" had better be vaccinated against the disease.

CHAPTER XXI

FIRST AID IN EMERGENCIES

Antitoxin.—What is antitoxin? It is the specific substance nature produces in the blood to neutralize the poison or toxin of diphtheria germs. Well, if nature produces it in the blood, why should we not leave it to nature to cure diphtheria? Undoubtedly nature does and will cure many cases of diphtheria, but when the dose of diphtheria poison is very large it may kill the patient before nature has time to manufacture sufficient antidote to neutralize it all. In such cases we come to the rescue—or our friends the animals do—with more antitoxin to reinforce the quantity nature is able to produce.

This is how antitoxin is made: A young horse is carefully raised and kept under the cleanest conditions. A commission of expert veterinary surgeons test the horse in every way and certify to his perfect health. Then the horse is given a minute hypodermic injection of diphtheria poison—the toxin, not the germs themselves. After a short period the horse recovers, and then he is given a slightly larger dose. This gradually increasing dosage is continued over a prolonged period, the horse all the time carefully watched and kept healthy. In time he is able to withstand a tremendous dose of the toxin, which would promptly kill many unimmunized horses. This means that his blood contains a large amount of antidote to diphtheria poison. The horse is now freely bled, the

blood is received in sterile receptacles, the pure serum separated, condensed, and tested on guinea-pigs, to determine just how much diphtheria poison or toxin it will neutralize. Thus, 1000 units of antitoxin is the quantity necessary to neutralize 1000 units of toxin in the guineapig, and the unit is the amount of toxin which proves fatal when given to an unprotected animal.

This pure, standardized blood-serum from a healthy horse constitutes our remedial antitoxin. Before it is administered to human beings the horse is killed and scrupulously examined to make absolutely sure all its organs are healthy.

One thousand units of antitoxin might be a fair dose for a mouse with diphtheria, but for a 50-pound child 50,000 units might be insufficient to neutralize all the diphtheria toxin in the body. So it must not be imagined that small doses of 10,000 or 30,000 units represent a great deal of antidote. One might as well say 5000 milligrams (representing about 1 teaspoonful) of sugar would make a cup of coffee intensely sweet!

Some people—the old women of the neighborhood, both male and female—just know that antitoxin causes paralysis and all sorts of bad effects. Diphtheria used to cause paralysis much more commonly than it does to-day because the diphtheria poison has a special affinity for the nerve-cells. If paralysis follows diphtheria it is very definite evidence that antitoxin has not been used in large enough dosage, or that it has been used too late to save the nerve-cells from the poisonous effects of the disease.

The only fatal case of diphtheria the writer has ever seen was the case of a child of four years who sank steadily from ruthless poisoning while the ignorant, criminally obstinate parents refused to permit the administration of life-saving antitoxin. The entreaties of physicians, relatives, and friends all fell on deaf ears. You see, the poor, benighted people had heard somewhere that this mysterious antitoxin was not entirely safe for children—yet these same people had never raised any objection when the writer gave the same child such really dangerous remedies as arsenic, strychnin, aconite, and the like in other illnesses.

Asphyxiation.—This is suffocation or poisoning by carbon dioxid. It occurs in so many illnesses and accidents—gas poisoning, drowning, choking, smothering, and the like—that the treatment will be considered under other heads.

Artificial Respiration.—Of the various methods of artificial respiration, by far the simplest and most efficacious is that of Schäfer. Every school-child should be taught this maneuver, because knowledge of it may save a life. It is easier to do than to describe. It is performed with a minimum of effort. Place the subject prone on the ground or floor with the face turned to one side and the hands resting beside the head. [Prone means lying upon the abdomen, not upon the back.] Kneel beside or astride the hips. Rest your palms upon the lower ribs and lean forward so that the weight of your body comes upon the ribs. This forces air out of the chest. Then straighten up and rest a few seconds. This permits the chest to rebound, automatically taking in air. Keep repeating at the rate of sixteen or eighteen per minute as long as necessary.

This position enables water to run out of the mouth if the subject is drowned, and prevents the tongue from falling back and occluding the glottis, as often occurs in an unconscious patient lying on the back. Scientific tests have proved that this method gives a larger interchange of air than the more spectacular arm-pumping method long taught in first-aid courses. Moreover, Schäfer's method is free from the dangers and physical difficulties of the arm-pumping method (Sylvester's), and its simplicity commends it to everybody.

Black Eye.—This popular decoration can be prevented by the well-known soft answer, also by a thorough course in the fine art of self-defense. It may be mitigated by the immediate application of ice or very cold compresses to the insulted area for an hour or more after the accident happens. Beefsteak enjoys a popular reputation as a mitigant, but we imagine it works better if taken internally.

Burns.—Doctors classify burns thus: First degree, mere reddening of the skin; second degree, blistering; third degree, destruction of entire skin and injury of underlying tissues. But the treatment is much the same in any burn. First, let us mention some "don'ts." Don't apply salve of any kind. Don't break any blisters. Don't touch the burned place with the fingers.

For a safe, efficacious first-aid dressing this solution may be depended on in all cases:

R.	Picric acid	65 grains;
	Alcohol	21 ounces;
	Distilled water	T Guart

Dissolve the picric acid in the alcohol and mix with the water.

Directions.—Apply folded sterile gauze or soft muslin saturated with the solution. Cover with dry cotton and a bandage. Do not remove the dressing for several days. Then wet thoroughly with the solution in order to remove the strips of gauze.

For a clean burn—that is, one not infected by dirty handling or dirty salves—once a week is often enough to change the dressing.

Blisters may be pricked with a sterile needle on the second or third day.

Picric acid stains the hands and clothing. It may be washed out with cold water.

Such applications as "carron oil" (linseed oil and limewater), unguentine, carbolized salve, and cat-tail poultices are not only unnecessary, but in most instances dangerous and delay healing.

The scar of a burn will depend altogether upon the depth of the injury and the aseptic handling the case receives. Certainly no salve or queer medicine will prevent scar formation in a severe burn. Skin-grafting may be advisable as an aid in the healing of large burns. This is perhaps the simplest operation a doctor can perform. The patient's skin or that of a near relative is most likely to grow upon the raw surface.

For small, trifling burns or scalds which do not blister it is of slight moment what remedy is applied. Sterile vaselin from a collapsible tube is as good as anything.

Cuts, Wounds, and Abrasions.—The sole desideratum in the first-aid treatment of minor wounds is cleanliness. If the wound can be kept clean it will heal promptly, and there is no reason why a cut doesn't heal in one person as rapidly as in another unless it be unclean handling.

If an antiseptic seems necessary—and none is necessary or even advisable in the majority of bleeding wounds—one swabbing of the entire open surface and surrounding skin with tincture of iodin will be sufficient for every purpose. After that aseptic, not antiseptic, dressing is needed. For small abrasions or cuts, as soon as bleeding ceases paint on a coating of flexible collodion, which will adhere to dry skin and protect the wound from infection. For larger wounds the gaping edges may be drawn

together with clean strips of adhesive tape (zinc-oxid adhesive plaster is best), covered with a little sterile vaselin to prevent sticking of dressings, a generous pad of sterile gauze or muslin and a bandage, then left undisturbed for at least four or five days. Redressing a wound, unless there is evident infection (increasing pain, discharge, odor, or rise of temperature) can only delay and endanger normal healing.

No known substance will hasten healing. It is incorrect to think of any particular agent as "healing." Tissue cells grow at their natural rate, and in the absence of infection by unclean handling the most efficacious salve is plenty of "let alone." Surgeons call it "scientific neglect" or "armed neutrality"—and the surgeons ought to know better than grandma and the corner druggist what is what.

Dry dressings are generally preferable to moist ones. Moist dressings are used to encourage drainage from an infected wound, but never for a clean wound—not in good surgical practice, at any rate.

Sterilized talcum powder is one of the kindest applications for simple wounds.

Protection of the wound against the contact of dirty or unsterile fingers, clothes, or objects is the important point.

Rest of the part favors early healing, but use of it delays healing.

Air and sunlight are nature's germicides. None have yet been discovered which can accomplish anything like these remedies for infected or dirty wounds or ulcers.

Convulsions, or Spasms, or Fits.—Children seized with convulsions should be placed at once in a hot bath, as hot as the hand will stand, and kept there for as much

as half an hour or until the spasms cease, a cold cloth being kept on the forehead. Meanwhile a warm bed should be made ready and the child put in it immediately upon leaving the bath.

Adults may be placed in a hot pack (blankets wrung in hot water), or simply watched and prevented from injury until medical aid can be had. If possible a cork or other blunt object should be held between the teeth to prevent biting of tongue.

Coma, Stupor, or Unconsciousness.—This may be due to alcohol-poisoning, opium-poisoning (ormorphin, heroin, codein), apoplexy, diabetes, uremia (Bright's disease), epilepsy (after a fit), brain injury, or other cause. An odor of alcohol on the breath does not prove the victim hasn't had a stroke of apoplexy or an injury to the skull. Whatever the cause of the stupor, the victim should be taken to his home or a hospital. Do not pour liquids into the comatose person's mouth, because he may choke to death. Do not apply heat enough to burn the unconscious patient. Do not permit the police to diagnose "drunk" unless a responsible physician confirms the diagnosis. Let the victim lie flat and loosen the clothing about neck and waist.

Concussion of Brain.—This is nothing but shock, and should be treated as shock. Injury to the head always dazes the victim if it doesn't cause complete unconsciousness, and this dazed condition is concussion. It may pass off after a few hours, and then, perhaps, the patient again sinks into a deep stupor, which is considered strong evidence of a hemorrhage within the skull, and demands prompt surgical attention, maybe trephining, to reach and tie the bleeding artery.

Croup.—Catarrhal or spasmodic croup is getting more

rare every day as people learn to sleep with their bedroom windows open. Croup never has and never will kill a child-diphtheria is the true name of laryngeal or "membranous" croup. Simple croup does not seriously affect the child's health in the daytime, but comes on at night, after a day or two of catarrhal cough or "cold" (coryza). child wheezes and crows and struggles for breath. emetic—a teaspoonful or two of syrup of ipecac—is given, vomiting will occur in about fifteen minutes, relaxation of the spasm follows, and the child soon falls asleep—to repeat the performance perhaps the next night. Even if no treatment were given and the child's color became blue and ghastly, that condition in itself would soon relax the spasm and the child would be automatically relieved. Croup fills a mother's heart with terror, but it never proves fatal.

Diphtheria of the larynx, formerly mistaken for croup, is extremely fatal. It differs from ordinary croup in this important respect: In ordinary croup the child is not apparently ill in the daytime, nor is there any evident difficulty in breathing in the daytime, but only the slight "cold" or perhaps an occasional croupy, brassy barking cough; but in diphtheria of the larynx the child is very evidently ill in the daytime and the prostration increases from hour to hour, and there is evidently difficulty in breathing, and the noisy breathing is just as manifest as in the night. We trust these clear-cut distinctions will assure parents that simple croup, hard as it is for the little ones, is not and cannot be fatal under any circumstances.

A large cool moist compress about the throat tends to prevent an attack of croup in a child threatening to have an attack. Cold air always prevents it, if the parents can be made to realize the harmlessness of cold air.

We have never seen a child with croup in a well-ventilated room.

In fact, croup is getting to be an unusual disease nowadays, confined almost entirely to the homes of the coddled.

Drowning.—A person rescued from the water should be given the Schäfer artificial respiration elsewhere described. People have been resuscitated after fifteen minutes' submersion. Efforts should never be abandoned in less than an hour. Warmth and friction, electricity and hypodermic medication should be applied while the respiration is kept up. It is foolish and dangerous to attempt to "roll him on a barrel," and besides, there is never a barrel handy. There is no harm in inverting the rescued person and giving a few brisk slaps on the upper part of the back. The pulmotor is a pretty piece of machinery, makes a spectacular show, but in practice is inferior to the method of artificial respiration elsewhere described. In drowning there is surprisingly little water in the lungs. That isn't the important thing; the important thing is that the victim has ceased breathing and must be kept breathing by artificial means.

Dislocations.—A dislocated joint looks deformed, is more rigid than its fellow of the other side. If moderate pulling does not reduce it the bystander had better leave it for skilled hands.

Fainting.—Place the person flat on the floor, ground, or a couch, with the head as low or lower than the rest of the body. Loosen all tight clothing. Admit a draft of cold air if possible, or fan the face. If the person can be made to swallow, give ½ to I teaspoonful of aro-

matic spirits of ammonia in about an inch of cold water in a cup or glass as a quick, active stimulant. Never give alcohol in any form. Keep out all of the curious and preserve a quiet atmosphere. Some strong hot tea or coffee is helpful. Hot-water bottles to the feet. Keep the patient lying down for at least an hour after the attack.

Fractures.—A fractured (broken) bone may be quite freely movable and the victim may even walk on it. A folded newspaper or a pillow bound about the limb makes an ideal first-aid dressing for a fracture. If the skin is broken, do not touch the open spot, but cover it carefully with a clean towel or other clean cloth or sterile gauze and bandage.

Foreign Body in Eye.—The best way to remove anything from the eye is by freely washing the eye with warm normal salt solution (tablespoonful to the pint of boiled water). This may be poured over the eye or gently squirted over it with a dropper. The corner of a clean handkerchief may be moistened in salt solution and used to pick off a cinder or speck. No instrument should be put in the eye except by a physician. For burns by acids or alkalies prolonged washing by normal salt solution is best. The lid may be turned back to search for a foreign body by having the patient gaze downward while you place the left thumb, nail down, against the upper lid and grasp the lashes with the right thumb and forefinger, turning the lid back over the left thumb-nail by drawing it gently away from the globe first.

Foreign Body in Ear.—Children often put things in the ear canal, and sometimes it is difficult to remove them. It is better to call a physician because the drum is very easily injured by unskilled efforts. If an insect gets in

the ear pour the canal full of warm water to float it out, or smother it with oil, or chloroform the insect as elsewhere described. (See chapter on the Ear, page 71.)

Foreign Bodies Swallowed.—(See page 330.)

Hemorrhage.—Nosebleed usually occurs from a small ulcerated spot on the cartilaginous septum just within the nostril produced by the patient's finger-nail. If bleeding recurs often this ulcer may require cauterizing. Moderate prolonged pressure with the thumb and finger upon the sides of the nose will control it. Resting in a forward sitting posture is best. Do not blow the nose soon after a nosebleed. If the bleeding cannot be controlled by pressure, try cold to back of neck and insert a small piece of cotton moistened with vinegar. In severe or uncontrollable nosebleed the physician may have to pack the nostril.

Bleeding from the Lungs.—The blood spat out is frothy. Absolute quiet in bed is the first remedy. An ice-bag over the probable affected area of the lung. Internal or hypodermic treatment is usually required to prevent recurrence.

Bleeding from the Stomach.—The blood is vomited usually with partly digested food. It may be bright red or dark red, black, or in the semblance of "coffee grounds." No food or water should be taken until medical advice is had.

Bleeding from the Bowel.—Usually from piles. Avoid cathartic tablets or pills containing aloes or aloin. Keep perfectly quiet and lying down.

Bleeding from the Womb.—This suggests fibroid tumor, cancer, placenta prævia, miscarriage, or chronic uterine disease. Remain in bed until medical aid is obtained.

Accidental Hemorrhage.—Direct pressure upon the bleeding point by a clean pad of gauze or muslin snugly

bandaged in place is the best way to stop hemorrhage. If that fails, then a handkerchief or other cloth may be loosely tied above the bleeding point, then twisted with a stick until the bleeding is controlled. This, however, is more painful and risky than local pressure upon the bleeding vessel as described.

Ingrowing Nail.—Caused by narrow, tight, pointed shoes. Go barefoot! The tissues grow up over the nail; the nail doesn't grow into the tissues. Apply spiral strips of adhesive plaster in such a way as to draw the sensitive tissues away from the edge of the nail. the nail straight across, not rounded. Scraping the surface of the nail to make it turn back is a useless effort. If granulation tissue ("proud flesh") fills the furrow at the edge of the nail it should be cut away by the doctor-and "proud flesh" here as anywhere else is insensitive to pain and may be trimmed away with scissors—or it may be kept filled with powdered alum. In old cases of ingrowing nail the only relief is the removal of a wedge-shaped piece of skin near the nail edge, which permits the impinging skin to be drawn away from the nail.

Sprains.—The first aid for sprains is hot water, the ankle or injured joint being plunged in a large pail or tub of water as hot as the skin will bear, and the water kept hot by frequent additions for an hour. Then the skin may be carefully dried and the joint firmly strapped with adhesive plaster, or a snug bandage applied and a high boot laced on and worn uninterruptedly to support the sprained joint. In some injuries it is impossible for even the surgeon to determine whether a small bone is fractured unless an x-ray examination is made. For the majority of sprains the sooner the patient uses the properly supported joint the better. Early massage and

passive movements should be insisted on at any event. Prolonged disuse of the injured joint favors stiffness and permanent weakness. First be sure it is only a sprain, then apply a proper supportive dressing, then make the patient get about.

Shock is the inhibition, depression, nerve exhaustion, or circulatory failure following a fright, injury, or major surgical operation. Fear is the predominant factor in shock. When the python approaches a rabbit the latter is literally paralyzed with fear and makes no effort to flee, while the python leisurely encoils and crushes the senseless prey. Shock is largely determined by the psychic influence connected with the accident.

The treatment is the application of hot-water bottles or other form of external heat, rest with the head low, stimulation by hypodermic injections or by aromatic spirits of ammonia, or strong coffee or tea if the patient can swallow. Never give whisky or brandy, which only adds to the depression after a momentary, fleeting, and false "warming up"-that due to the local irritation of alcohol in the stomach. Nowadays, by the Crile anociassociation and nerve-block technic, surgical shock is absolutely preventable. A patient about to undergo operation should be spared all unpleasant thoughts and questions and yarns and suggestions likely to arouse anxiety and fear. The atmosphere of his family and friends will in great measure influence his ability to undergo the ordeal, and to this end tears, fears, and doubts should be kept out of the sick room, and smiles, pleasantries, and good cheer admitted even when the day is dark-

In fact, people little realize how sharp a sick person's eyes and ears and intuition are. A little practical chris-

tian science (without the capitals and without the fees) will go a long way toward preventing relapses, shock, or prolonged convalescence.

When children receive bumps, falls, or even greater injuries, let no one display hysteric alarm or fear. Let the injury be minimized and laughed away or, better, let it be entirely ignored when it is obviously a trifling bump. That is the way to train up a well-balanced, courageous child. This foolish kissing of injuries, soft sympathy, and "naughty table, naughty stick, naughty this and that" talk cannot but injure a child's nervous stability. This is no mere theory. We've tried both methods right in the family, and we know.

Poisoning.—The detailed tables of poisons and antidotes given in most medical works are of no practical value to the lay reader and, we fancy, rarely or never consulted even by the physician. We shall mention only a few points which every one should bear in mind when confronted with a case of poisoning.

First, the vast majority of poisoning cases encountered nowadays are (1) those from opium or its derivatives, morphin, codein, heroin, etc. (added by the astute nostrum makers to create the necessary market for a "repeater" in the popular cough mixtures, soothing syrups, and pain killers), and those from other narcotics, such as chloral, chloroform, alcohol, cocain. Next, those from irritants or caustics which destroy tissue, such as mercury, carbolic acid, the mineral acids, lyes, and various metallic poisons. Finally, those from drugs which produce convulsions, like strychnin, pennyroyal, etc. Hence we have three classes to consider—narcotic, irritant, and convulsive poisons.

Whatever the nature of the poison taken, the first-

aid measure is always the emptying of the stomach. This may be accomplished by giving the victim I grain of copper sulphate dissolved in a tablespoonful of water, and instantly. Slower emetics are syrup of ipecac, a tablespoonful; half a glassful of warm water containing a teaspoonful of powdered mustard; half a glassful of warm salt water; or a finger placed well back in the throat.

If an irritant poison has been taken, the raw whites of several eggs should be given or large amounts of milk.

The washing of the stomach and perhaps the use of the proper antidote is, of course, a measure only a physician can apply.

If an acid is taken, the most available antidote is from one to three teaspoonfuls of soda ("saleratus") dissolved in a glassful of cold water.

For phenol ("carbolic acid"), which is not an acid, the *local* antidote for the burns is alcohol; the internal antidote is epsom salts in solution.

CHAPTER XXII

THE MEDICINE CUPBOARD

MISTAKES, accidents, and minor illnesses will occur in the best regulated households. A medicine cupboard should be stocked with such remedies as may be needed in these emergencies, and some one in the household should be posted on the simple, common-sense remedies kept in the medicine cupboard and how to use them. For this purpose a list of remedies is presented, with suggestions to guide the home nurse in the care of every-day ailments.

First it may be well to give a list of articles useful for the first aid in accidents:

Tincture of iodin (U. S. P.), r ounce.

Absorbent cotton, one 4-ounce carton.

Sterile gauze, one dozen r-yard folds in sealed envelopes.

Bandages, half-dozen 5 yards by r inch; half-dozen 5 yards by 2 inches.

Zinc oxid adhesive plaster, roll r inch by 5 yards on spool.

Flexible collodion (U. S. P.), r ounce.

Alcohol (pure grain), ½ pint.

Boric acid powder, ½ pound.

Picric acid (crystals), 65 grains.

And the following medicines should be kept on hand for minor ailments:

Copper sulphate (U. S. P.), half-dozen 1-grain powders or tablets, or 8 grains dissolved in 4 ounces of water and labelled "Copper Sulphate. Emète, Dose, one tablespoonful."

Syrup of ipecac (U. S. P.), 1 ounce.

Aromatic spirits of ammonia (U. S. P.), 2 ounces.

Powdered alum (U. S. P.), 1 ounce. Sterile vaselin (in collapsible tubes), two tubes, each I ounce. Seidlitz powders (U. S. P.), 1 dozen. Phenolphthalein (in tablets, flavored with sugar, chocolate, cocoa, wintergreen, or peppermint), 100 1-grain tablets. Podophyllin (the "vegetable calomel"), 100 10-grain tablets. Aromatic syrup of rhubarb (U. S. P.), 4 ounces. Powdered camphor (U. S. P.), 1 ounce. Olive oil, 4 ounces. Glycerin, 4 ounces. Alkaline antiseptic solution (N. F.), 1 pint. Turpentine, 1 ounce. Sweet spirits of niter, I ounce. Milk of magnesia, 4 ounces. Solidified liniment, 1 ounce. Colic remedy, 2 ounces.

The abbreviation U. S. P. means United States Pharmacopœia, the official and legal standard of pure drugs. The abbreviation N. F. means National Formulary, the legal standard for such combinations of drugs as are not included in the Pharmacopæia.

We shall now briefly discuss the purposes of each of . these articles in order.

Tincture of Iodin.—The surgeon's safe antiseptic. Every fresh cut, abrasion, or wound should receive one swabbing with this antiseptic. Iodin is also an old standard counterirritant for painting the skin over painful swellings. Once is enough in a week. Perhaps for most persons pure tincture of iodin should be reduced with an equal amount of grain alcohol. A few drops of iodin in a cupful of water makes a very good gargle or mouth-wash. A teaspoonful in a quart of water makes an ideal solution to use as a douche or as an irrigation to cleanse a dirty wound or ulcer.

Absorbent Cotton.—This is pure cotton from which the cotton-seed oil has been removed. It is put up sterilized



in cartons. In using it be careful to touch only the portion you are removing from the roll. Do not unroll the whole package and expose it to dust unless you bake it in the oven before using it again. Do not apply cotton next a raw surface, but always outside of gauze or muslin, because it sticks and is diffcult to remove. Cotton absorbs any discharge, protects the wounded part from injury, and is germ-proof.

Sterile Gauze.—This is cheese-cloth sterilized by heat. Ordinary cheese-cloth may be cut in yard squares, all edges folded in, packed in muslin, and sterilized by baking in an oven for half an hour on two successive days. When a package of sterile gauze is opened, be careful not to touch any except the piece you are removing, and even that had better be handled with forceps or "tweezers" which has just been held in a flame. The idea is that even freshly washed hands may harbor germs and so infect the gauze and the wound. Gauze can be had in 1-yard squares sealed and in a germ-proof envelope.

Bandages.—Gauze bandages of any width may be bought in drug-stores, or a 5-yard strip of fine cheese-cloth may be cut into the desired widths by carefully pulling out one thread through the length of the strip first and cutting along this line without cutting the adjoining threads. The bandages should be wound very tightly and enclosed in paper or kept in a covered jar or tin box, the whole being sterilized on two successive days as described above. Don't apply a bandage like the "movie" people do—that is, don't unwind it as though you were going to lasso the victim. Simply take a turn or two about the part to be bandaged and then apply it by gradually unwinding as you encircle the part.

Z. O. Adhesive Plaster.—This is more sanitary and efficacious than the old-time court-plaster. A r-inch spool is the handiest package. In applying it see that the surface is perfectly dry and free from oil, dirt, or powder, else it will not stick. Preliminary mopping with a little alcohol or gasoline on a bit of absorbent cotton will cleanse the skin well. Also do not handle the sticky side of the plaster with your fingers. It is preferable to stitches for drawing together small gaping wounds. A little strip of gauze should be placed between the wound and the plaster, and strips long enough to get a good grip on neighboring skin should be used. A strip or two of adhesive will hold a bandage on a shapely limb.

Flexible Collodion.—This is a solution of a rubber-like substance in ether. Painted over a small cut, hangnail, or other sore spot it evaporates and leaves an elastic coating which is impervious to water and protects the spot without being conspicuous. The surface must be perfectly clean and dry. The trade name for a similar preparation, but of less agreeable odor is, "Newskin." The bottle should be kept tightly corked, and if the liquid evaporates and becomes thick a little more ether or perhaps a bit of alcohol may be added to thin it. Paint it on, preferably with a small wisp of cotton tightly twisted about the tip of a toothpick.

Alcohol.—Useful for cleansing skin, bathing a feverish patient, rubbing the back of a bed-tired invalid, making spirits of camphor (powdered camphor dissolved in a little alcohol in a vial as needed), and the like.

Incidentally, there are three things that have no place in the family medicine cupboard, and they are, whisky, brandy, and wine. Unless one likes one's nip there is no longer any reason for considering these narcotics stimu-



lating. If one wants a nip now and then, at any rate, why try to pretend it is "medicine"?

Boric Acid Powder.—This is a very useful agent. As much as can be dissolved in freshly boiled water makes an ideal eye-wash for sore eyes, a gargle, irrigation, or douche. It is safe and possesses all the antiseptic virtues any proprietary liquid can boast. Fresh solutions should be made up as needed, always putting in the vial a little more than the water will dissolve, letting stand, and using the clear upper part. There is this to say about boric acid solution—whatever you use it for, you can't do any harm. Nursing nipples may be kept in it between nursings. Hot S. S. B. A. (saturated solution of boric acid) is a routine gargle in hospitals and clinics. the most universally useful solution for vaginal douches where a mild antiseptic free from irritation or danger is In fact, there are many daily uses for this desired. remedy.

Picric Acid.—This is for burns or scalds. When the remedy is needed, dissolve the 65 grains of picric acid (which should be kept in a corked vial) in about $2\frac{1}{2}$ ounces (5 tablespoonfuls) of alcohol and add the solution to enough water recently boiled to fill a quart bottle. Use it to moisten strips of gauze to apply to the burn. Cover with absorbent cotton, bandage snugly, then leave alone for several days, when the dressing may be loosened by moistening with the solution again, and reapplied or left off, according to the state of the burn. This gives as much comfort as any application, and is free from the objections to salves, dirty oils, and the like.

The picric acid dressing is the routine dressing used in hospitals where many burns are treated. The stuff stains clothing and hands, but if rubber gloves are worn the fingers will be protected. It is washed out of clothing by cold water.

Rubber Gloves.—If one puts on rubber gloves and washes them thoroughly they protect the patient to be dressed against infection by one's fingers, and they protect one's fingers from stains or possible infection by the wound. A pair may be had for about 40 cents.

Copper Sulphate.—One grain of copper sulphate dissolved in about a tablespoonful of water may be given to baby or adult as a very prompt, almost instantaneous emetic. If necessary the dose may be repeated in five minutes. It is the quickest emetic we know, though it does not invariably work. It should be ready for all emergencies. The druggist will have to weigh out the 1-grain dose, or he may dissolve enough in water to make several tablespoonful doses.

Syrup of Ipecac.—This is the old-fashioned emetic. It is good, but generally takes from ten to fifteen minutes to act, and even then may fail. However, for general medical purposes it is perhaps better than copper sulphate. A teaspoonful may be given to a child, a table-spoonful or more to an adult, and repeated in fifteen minutes if necessary.

Aromatic Spirits of Ammonia.—From 10 drops to ½ teaspoonful, given in about a tablespoonful or two of cold water, makes a very quick, reliable stimulant in cases of fainting, collapse, shock, and heart failure. The remedy is also a useful antacid, a few drops being given in a little water every half-hour or so to relieve sour stomach. It also tends to cause eructation of gas from the stomach. In any case the dose of aromatic spirits of ammonia may be repeated every fifteen minutes or half-hourly for three to six times if found necessary.

Powdered Alum.—This is perhaps the simplest and most cleanly astringent for local use. The powder may be applied pure to the edge of an ingrowing nail or to a persistently bleeding cut, best by moistening a bit of cotton on a toothpick and dipping this in a little of the powder poured out on a clean paper. A solution of a teaspoonful in a quart of water makes a mildly astringent douche, gargle, or wash for general purposes when astringent effect is desired.

Vaselin.—The family jar of vaselin is an abomination. This neutral unguent should be used only in collapsible tubes, which preserve the unused portion without contamination by fingers, instruments, and dust. It possesses no healing or medicinal virtues, but is a neutral lubricant, and useful in some cases to prevent the sticking of surgical dressings, and wherever an emollient is required.

Seidlitz Powders.—The blue paper of a Seidlitz powder contains ordinary soda (saleratus) and Rochelle salts, about a heaping teaspoonful. The white paper contains some tartaric acid. Dissolve the contents of each paper in a separate glass containing about 1 inch of cold water. When thoroughly dissolved, mix them in one glass, and as soon as the primary ebullition subsides a bit let the patient drink the still "fizzing" draft. This is a pleasant way of taking a dose of saline cathartic. In case of nausea it is sometimes better to divide each powder into fourths and administer one-fourth of the dose at a time every half-hour until the whole is taken. If necessary, additional salts may be added to the solution of the blue paper—say, a teaspoonful of Epsom or Rochelle salts—the effect is the same.

Speaking of saline laxatives, Epsom salts, Rochelle,

Glauber's, Carlsbad, phosphate of soda, citrate of magnesia, and various proprietary saline effervescent preparations are all alike in effect, though varying in relative strength and taste. A saline acts by extracting water from the bowel wall, thus irritating and setting up peristaltic motion. No matter whether it is labelled "mineral water" or "Old Doctor Liverall's Pleasant Saline Aperient," the effect is identical, varying only in degree. Seidlitz powders are as good as any other saline laxative. Fortified with additional salts they will accomplish everything a saline laxative can accomplish.

Phenolphthalein.—This chemical has been used for many years in coloring certain wines red or pink—the colorless solution turns pink if made alkaline. When an excess was used in the wine in France consumers noticed a laxative effect. Thus it was introduced as a laxative. It is an excellent one for frequent use, being apparently devoid of any other action—I to 5 grains may be taken as a daily dose. It never gripes or irritates. It is sold in I-grain tablets, should be masticated for best effect, and may be had plain (it is almost tasteless) or flavored with various flavors.

Podophyllin.—This is the active principle of "Mayapple." It takes the place of calomel in our armamentarium— $\frac{1}{10}$ -grain doses produce an effect about equivalent to $\frac{1}{2}$ -grain doses of calomel. A child may take $\frac{1}{10}$ grain, an adult may take 3 to 6 $\frac{1}{10}$ -grain tablets, as required. Podophyllin is for occasional use only, not being well suited for habitual use, in our opinion.

Aromatic Syrup of Rhubarb.—A practical substitute for that ancient, crude, and superfluous remedy, castor oil. Given in the same doses for the same purposes,

including that purpose for which castor oil is famous—sweeping out undigested or irritating masses which are setting up colic and diarrhea. Children like aromatic syrup of rhubarb. Some mothers fortify it by the addition of fluid cascara in small quantities.

Another laxative which deserves mention is the oldtime senna. We know of no physic with so little apparent habituating effect as senna used over periods of years. The leaves may be chewed, a tea may be made, or the leaves may be chopped up and thoroughly mixed with some fresh figs, the mass kept in a fruit jar, and a "chew" taken all hands round whenever needed. For this formula we must thank grandma, whom we are forever criticising.

Powdered Camphor.—Useful to dissolve in a little alcohol to make spirits of camphor when needed, or to dissolve in hot olive oil to make camphorated oil.

Spirits of camphor is a good application for cold sores or to bathe an aching head, and to inhale for mild stimulating effect.

Camphorated oil is the ideal counterirritant for babies and children; it may be rubbed upon the chest, back, throat, and bridge of nose for coryza, bronchitis, pneumonia, croup, and the like instead of harsh applications like mustard, turpentine, and other blistering agents.

Mustard.—A half-teaspoonful of mustard stirred in half a glassful of warm water makes a fairly good emetic. A mustard paste is made by mixing r part of powdered mustard with 4 to 6 parts of wheat flour, adding enough cold water to hold it together, spreading it upon a piece of muslin, and backing it with some brown paper, over the edges of which the muslin may be basted. It should

be just moderately warmed before being applied, and the skin should be watched and the plaster removed as soon as reddening is noticed.

A hot mustard foot-bath is one of the most efficacious measures we have for "colds," coryza, bronchitis, or in any illness when a sweat is to be desired. Never take or give a hot mustard foot-bath in the upright or sitting posture—there is danger of fainting, and, besides, such a makeshift is seldom effective.

The proper way to give a hot mustard foot-bath is thus: Place the patient in bed between blankets and minus his or her "nighty." Flex the knees and put the feet in the foot-tub, which is half-full of hot water with a tablespoonful of mustard stirred in it. Keep one hand on the tub to steady it and keep the patient well covered with the blankets. Have a pitcher of boiling water handy, and from time to time say, "My, the water's getting cold!" and dip out a little and add some hotter water, paying no attention to the patient's comments, except to hold the feet in the water at all costs. If the patient becomes querulous, change the cold cloth on his head and give him another glass of hot lemonade or hot ginger tea. Keep this performance up for twenty minutes. Then remove the tub, dry the feet, apply hot-water bottles, put on extra blankets, rugs, or other heavy articles of furniture, tuck in the covers about the neck, put on a fresh cold cloth, and bid the patient rest for an hour. At the end of that time remove the wet blankets and sponge him off with alcohol or dry with towel and leave him sleep in peace. We recommend the H. M. F. B. as a sovereign remedy for toothache, headache, chill, grip, coryza, sinusitis, bronchitis, and threatening pneumonia.

Olive oil or glycerin makes a good remedy to inject for

obstinate constipation, a few spoonfuls being injected with a hand-syringe or bulb. A few drops of glycerin on the tongue every little while will relieve an irritating cough. A little glycerin (tablespoonful) in 2 ounces of rosewater and about 10 grains of tragacanth and a teaspoonful of boric acid makes a very good hand lotion for roughness or chapping of the hands.

Alkaline antiseptic solution, diluted with 4 to 8 parts of warm water, makes a mildly alkaline, pleasant liquid for spraying the nose, a good mouth-wash and gargle, and a solution for general irrigating purposes.

Oil (or "Spirits") of Turpentine.—Five drops given on a little sugar will act as a carminative in cases of gaseous distention and colic. A few drops of turpentine may be placed upon a very hot compress to be applied directly to the abdomen to relieve colicky pain; this is called "turpentine stupe," and the cloth must be wrung out of water boiling hot by means of sticks. Once is enough for the turpentine, but fresh stupes should be applied as often as they cool.

Sweet Spirits of Niter.—A teaspoonful in half a glassful of cold water, a teaspoonful every hour, is an old and valued remedy for irritation of kidneys and bladder, suppression of urine, fever, and to encourage perspiration in a sick child. For an adult half a teaspoonful of the pure niter every two hours may be given for similar purposes.

Milk of Magnesia.—This liquid has but little taste. It is a mild laxative, an antacid, and a good baby medicine. A teaspoonful may be given in the baby's bottle, or to an older child in milk, surreptitiously if desired. Dentists recommend milk of magnesia as a mouth-wash for persons with acid mouth. It is preferable to soda to

relieve acidity of the stomach and to aid in raising gas. However, it produces no gas in its decomposition in the stomach as soda does. A tablespoonful of magnesia usually has a very mild laxative effect, more so when considerable fermentation and consequent acidity is present in the stomach. For children coming down with acid intoxication—that is, nausea, vomiting, high fever, slight irritation of throat, and heavy sweetish breath which the grandmas call "worms," the doctor "acute intestinal indigestion," and the scientist "acid intoxication"—nothing is better than spoonful doses of milk of magnesia given every hour or two until the bowels become loose or the symptoms subside.

Solidified Liniment.—This is a modern substitute for the old-time bottle of liniment, being more convenient and cleanly. There are numerous preparations which the family doctor may supply or recommend. Here is the formula of a good one for general use as a rubbing liniment:

R.	Menthol	5 grains;
	Oil of wintergreen	10 drops;
	Extract of belladonna	20 grains;
	Lanolin	6 drams;
	Petrolatum, enough to make	r ounceM.

Make into ointment and put in screw-cap jar or collapsible tube. About 5 or 10 grains of capsicum may be added to make it heating.

This may be rubbed on for the relief of pain, soreness, lameness, and stiffness anywhere, the only precaution being to keep the stuff out of the eyes, menthol being irritating to the eyes.

Colic Remedy.—The market is burdened with all sorts of narcotic colic cures. Here is one which may be safely used in the home:

R.	Spirits of chloroform ½ ounce;
	Spirits of camphor ¹ "
	Compound tincture of lavender, enough to
	make 2 ounces.
Directio	ms.—Teaspoonful in a little water every half-hour for four
doses' if n	ecessary.

The small quantity of chloroform in the mixture is incapable of producing any bad effects.

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APPENDIX

Hot Mustard Foot-bath.—One of the most effective remedies for any acute illness beginning with chilliness or fever, for any illness called by the meaningless name of "cold" or the junkroom title of "grippe," or for acute sinusitis or "ulcerated tooth" is a hot mustard footbath in bed. In bed is the only proper or safe place to take a hot mustard foot-bath. (See page 376.)

In order to be effective the H. M. F. B. must be thoroughly given. If the patient does not swear he should feel like the devil anyhow. If he doesn't get all "het up" about it the bath is a failure. You must make him sweat for his sins. From twenty minutes to one-half hour is sufficient. Then remove the tub. dry the feet, apply a hot-water bottle, cover the patient up, and leave him at his own designs. When he has been eliminating toxins through his skin for an hour, remove the blankets, bathe him with a little alcohol, put on dry clothing, and the deed is done. In bronchitis, pleurisy, and pneumonia the H. M. F. B. is one of our best remedies. In pneumonia the foot-bath is sometimes repeated every two or three hours for several days.

Alkaline Antiseptic Solution.—There are on the market numerous pleasantly flavored and colored solutions under various euphonious names, all with more or less antiseptic value. These are expensive luxuries absolutely unnecessary. For instance, we include in this class such proprietary medicines as "listerine," "glyco-

thymoline," and dozens of similar preparations. In the United States Pharmacopœia, the legal standard formulary for doctors and druggists, is a formula for such a solution, mildly antiseptic, pleasantly flavored, called Liquor Antisepticus, or Antiseptic Solution, as follows:

This makes a pleasant preparation for use as a gargle, mouth-wash, cleansing wounds, etc., diluted with from 4 to 8 parts of water. It is acid in reaction.

In the National Formulary, also a legal standard for physicians and druggists, there is a formula for a mildly alkaline solution known as Liquor Antisepticus Alkalinus, or Alkaline Antiseptic Solution:

Potassium bicarbonate,
Sodium benzoate of each 3.2 parts;
Sodium borate o.8 part;
Oil of wintergreen o.04 part;
Thymol,
Eucalyptol,
Oil of peppermint of each o.02 part;
Glycerin 25.0 parts;
Water enough to make 100 parts.
Colored purplish red with persionis.

This alkaline antiseptic solution is more suitable for spraying the nose or throat, the alkaline reaction rendering it more solvent for mucus. It is also used diluted with from 4 to 8 parts of water.

With either of these formulas available, no one need squander money on fancy labels, extravagant claims, and extensively advertised proprietary medicines which cannot possibly possess any greater medicinal virtues.

Pyorrhea Tooth Paste.—The Endameba buccalis is probably the sole cause of pyorrhea in many cases and a contributing cause in others, along with various streptococci and staphylococci (ordinary pus-producing bacteria). Ipecac or its active principle, emetin, is a specific amebacide, acting upon the endamebas through the blood-stream and probably in lesser degree locally. Whether or not the dentist or physician considers a course of hypodermic injections with emetin necessary, there can be no harm, and often great benefit, from the habitual use of a tooth-paste or dentifrice containing this amebacide in minute but sufficient quantity. Such a paste is marketed by the Elmira Drug & Chemical Company, Elmira, N. Y., under the trade name of Pyor Dental Cream, and it may be adopted by those with spongy, tender, bleeding, or inflamed gums for habitual use. In many instances it gives the most gratifying results in a short time.

Cold Compress.—For the relief of sore throat, tonsillitis, early stage of quinsy, laryngitis, tickling cough, bronchitis, headache, and various other local inflammations or congestions nothing is more grateful than the cold compress. Ring out a small towel in cold tapwater or ice-water. Fold it and apply it to the throat or other part. Cover it over with a piece of oiled silk or waxed paper, and apply a few turns of flannel bandage or woolen flannel to retain in place and keep night clothing dry. Apply a fresh compress every half-hour or so. The effect is stimulating, and after a time

relaxing, much like that of a warm poultice. People in the habit of using the cold moist compress know how much relief it gives.

Palatable Epsom Salts.—So far as measurable medicinal effects are concerned, it matters not a particle what saline you take, whether Epsom, Rochelle, Glauber's, Carlsbad, or phosphate of soda, or Seidlitz powder, or the nostrum "Sal Hepatica," or any of the mineral aperient waters, or any of the numerous effervescing saline proprietary preparations. Epsom salts is quite as good as any other salts for any medicinal purpose. Effervescing Epsom salts (magnesium sulphate) can be had if desired. Or a solution of Epsom salts may be flavored with lemon, sugar, and other ingredients, and perhaps colored with fresh fruit juice and made fairly palatable. Salts are for occasional use only, as in acute illness. Never should salines or mineral aperients be habitually used merely for laxative effect.

Calamine Lotion for Itching Skin Diseases.—In many skin troubles, such as eczema, erythema, hives, poison ivy, there is itching or smarting, and a lotion or wash of much value is the well-known calamine wash:

Powdered calamine	½ dram (dram is teaspoonful);
Zinc oxid powder	ı dram;
Glycerin	I ounce;
Lime-water	
Rose-water	enough to make 8 ounces.

When itching is intense a small amount of phenol (carbolic acid) may be added to the calamine lotion, say $\frac{2}{3}$ dram in the 8 ounces, which would make the carbolic acid strength about 1 per cent. The mixture should be thoroughly shook up and applied by patting

on with the fingers, without rubbing, and allowed to dry on, several times a day.

Skin Cream.—Many individuals complain of itching of the skin following a bath with no apparent skin trouble to account for it. The following cream is useful to relieve this:

Lanolin	2 drams;
Boroglycerid	ı dram;
Cold cream (made with white vaselin)	6 drams.

To be thoroughly mixed and dispensed (preferably) in collapsible tube. Label, Bulkley's Cream (formula suggested by Dr. L. D. Bulkley, the New York skin specialist).

When itching or burning is severe there may be incorporated in the cream 5 or 10 grains of menthol.

Disinfectant.—Carbolic acid, though too poisonous for promiscuous use as an antiseptic in or on the body surface, is a very efficient disinfectant for discharges, clothing, articles, such as thermometers, which cannot be boiled or baked. However, it is rather expensive if properly used, and that means the full 5 per cent. (1 part to 20 parts of water, or almost a tablespoonful in each pint of water) sold by druggists. When carbolic acid (phenol) is used in weaker strength it is unreliable.

A standard disinfectant of the United States Pharmacopæia is called Compound Cresol Solution, or Liquor Cresolis Compositus. It consists of equal parts of cresol (a coal-tar product like carbolic acid) and green soap. There is a proprietary disinfectant of similar character called "lysol," but an expensive one to use. A 1 per cent. solution of compound cresol in water (about 1 teaspoonful in 1 pint) is efficient for all ordinary disinfectant purposes if the object or material to be disinfected stands in the solution for one-half hour. It is

thus useful for disinfecting sputum, urine, feces, etc.; also for thermometers, catheters, and similar articles. However, any object which can be washed with soap and water is pretty well disinfected by the mere washing.

Hexamethylenamin.—This antiseptic is referred to on page 34 of the text. It is a United States Pharmacopæia remedy, but under various trade names and combinations it is marketed at fancy prices by the proprietary houses as "urotropin," "formin," "cystogen," etc.

It is soluble in water, has but little taste, and exerts considerable antiseptic influence when eliminated in the nasal chambers, in the lining of the accessory sinuses of the nose, perhaps in the throat, in the gall-sac, and especially in the kidney and bladder. It may be had in 5-grain tablets, and for an adult from 1 to 4 tablets may be taken, preferably dissolved in a tumblerful of water, three or four times in twenty-four hours for not longer than three days. We place confidence in it in the early stage of infection or inflammation in any of the situations named. The drug, being a formaldehyd compound, frees a certain quantity of formalin in the secretions in which it is eliminated. It is especially efficient in certain acute inflammations of kidney, pelvis (pyelitis), and bladder, both in adults and babies. Also it seems to have an abortive effect, if taken in pretty full doses, in acute coryza or "head cold."

Normal Salt Solution.—Plain boiled water, if dropped in the eye, smarts and irritates, yet the tears do not irritate. If a small quantity of ordinary salt be dissolved in the boiled water, to give it about the same saline strength as the tears or the blood-serum itself,

it will not irritate the eye or other sensitive part. Normal salt solution or "saline solution" is boiled water containing about a level dessertspoonful (two small teaspoonfuls or one heaping teaspoonful) of table salt in each pint. It is the ideal solution for irrigating wounds, cavities, or abscesses, because it will accomplish every practical purpose an antiseptic solution could accomplish, and at the same time it does not irritate, delay healing, or poison the tissues as most antiseptics do if frequently used. Of course, it should always be made up fresh and used when still warm. For bathing the eyes or spraying or irrigating the nasal passages it is admirable, especially in children.

Liniment is mussy, fussy, unpleasant stuff to use; but sometimes one wishes to rub a lame or painful place with a good liniment. For a child we think camphorated sweet oil is the best application for promiscuous use. For an older person, when something rather warm and mildly counterirritating is desired, the most convenient and efficacious agent is solidified liniment in collapsible tubes. Here is a constructive formula for such a liniment, but most druggists have an equally good formula ready put up to dispense:

This is sufficient for 1 ounce.

A small amount of the liniment is squeezed out and

thoroughly rubbed in when needed. Care must be used to keep it out of the eyes.

Camphorated Oil.—For "colds," sore throat, bronchitis, or pneumonia in children and babies nothing is better than camphorated oil as an external application. It may be rubbed on over bridge of nose, throat, and entire chest once or twice a day. It can never irritate or blister like many crude applications carelessly used in such cases. The camphor should be powdered, and the oil (sweet oil or olive oil) heated and an excess of camphor placed in it, the whole shaken many times in the day and kept tightly corked, for camphor is volatile. It is well to make up only a few ounces and prepare it freshly when needed.

Corn Remedy.—In discussing corns on page 328 a solution was mentioned. It is as follows:

Salicylic acid	30 grains;
Lactic acid	15 grains;
Fluidextract cannabis indica	20 drops;
Liquid collodion flexible	1 ounce.

Keep in tightly stoppered bottle. Paint on corn each night until the corn can be lifted out.

The cannabis indica may be omitted from the formula without noticeable difference in effect. Likewise the lactic acid is not essential. A similar formula is listed in the National Formulary under the title of Collodium Salicylatum Compositum. This, of course, could be supplied by the druggist on call.

Wright's Sea-water Dressing.—The experience of surgeons in the great war in Europe has demonstrated that little is to be expected from antiseptic dressings for wounds other than the prevention of contagion from discharges in the dressing; that is, antiseptics tend to disinfect the dressings, but not the wound itself to any appreciable degree. And it is well known that antiseptics tend to interfere with the growth of new tissue cells and so delay natural healing. Sir Almroth Wright, the famous Father of Vaccines and surgical authority of England, found that the rather strongly saline seawater made a wonderfully efficient dressing for infected or inflamed wounds, having a sort of "drawing" influence which encouraged free drainage from the wound, and so admitted fresh germicidal blood-serum to the parts infected or inflamed. Wright, therefore, suggested that an artificial sea-water dressing be applied to all infected wounds. Thus, a solution of common salt and citrate of soda in boiled water (about 2 heaping tablespoonfuls of common salt and I heaping teaspoonful of citrate in 1 pint of water) will accomplish more for a dubious, dangerous-looking septic wound than any antiseptic efforts we have ever observed. compresses or manifold layers of cheese-cloth or gauze are kept saturated with the strong saline solution day and night, and only changed when soiled with discharge. At the same time, Wright also recommends, the patient may be given full doses of citrate of soda internally, perhaps a teaspoonful dissolved in a glass of water every two or three hours for a day or two, to encourage drainage and "thin" the blood in the region of the wound. Such a wet dressing may be kept covered with oiled silk or rubber-dam to prevent wetting the clothing. In practice we find this procedure wonderfully effective, and very often it seems to ward off a threatened general blood-poisoning by converting a painful, dry, infected wound or ulcer into a freely draining, moist, painless

one. In modern surgery provision for drainage, not antisepsis, is the all-important consideration. And right here let us once more salute or old friend, grandma, who always did insist upon the necessity of "drawing poison out" of an inflamed or infected wound.

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